FIRE ENGINEERING

NOVEMBER
1959

A REUBEN H · DONNELLEY PUBLICATION

The Journal of the Fire Protection Profession Since 1877

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IN THIS ISSUE . . .

What Happens when a School Burns? . . .

St. Louis fire fighters requested assistance from police firearms experts in order to control recent blaze in gas plant (see story page 1052)—*Globe-Democrat photo by Roy Cook*

if your men aren't wearing Bullard helmets... head protection is costing you too much!

MORE FIRES FOR YOUR MONEY!

Expose rugged Bullard HARDBOILED fire helmets to searing flame (high as 2,000° F.), freeze them, soak them in boiling water... these grueling punishments won't soften or weaken a Bullard fire helmet's protective characteristics! This is the only fire hat that exceeds Federal specifications. No Fire Helmet is tougher, yet few are as comfortable to wear. Light and cool on your head... made from non-conductive fiber glass they weigh only 20 ounces. In a choice of permanent non-fading colors, these helmets are equipped with replaceable suspensions that adjust to all standard head sizes. Today, ask to see how Bullard Fire Helmets make your budget go further... help you fight more fires for the money!

Stop First Aid Water Damage

New Bullard Fire Department First Aid Kits are 100% water proof. Every supply is separately sealed in Polyethylene wrappers. Includes the new approved, spray-on, pain killing burn treatment... *First On Burns.*

Economy Gas Masks

Equip your units with gas masks at a 12% saving. Bullard "SMOKE-EATER" gas masks contain exclusive money saving filter for toxic dusts, fumes, mists, fogs, and smoke.

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

E. D. BULLARD COMPANY SAUSALITO, CALIFORNIA

See your local fire equipment dealer or write for catalog of complete line of fire helmet accessories.

LET'S FACE THE FACTS—

when you want maximum sound volume over a wide area as well as for ahead you'll have to go a long way to match the performance of the FEDERAL Class Q Siren!

FEDERAL Class Q-2 Coaster Siren

DECIBELS *when and where you want them—*

what count in rating a siren!

50 watt Model PA 1—FEDERAL Electronic Siren

LET'S FACE THE FACTS—

the FEDERAL INTERCEPTOR combination Siren-PA unit produces 96 decibels at 100 feet in actual competitive tests. It consumes less current, but, because of internal efficiency, produces higher wattage output and better sound intensity than other Electronic Sirens. Electronic Sirens concentrate their sound output in a narrow path straight ahead. From the performance standpoint neither advertised wattage output rate nor consumption cuts any ice.

When you want the best in sirens, whatever their class, FEDERAL Signals set the standards that others try to approach.

When dealing with human life and Public Safety, even second best is too expensive!

Famous FEDERAL #17 Beacon Ray Light.

Decibels don't apply to light output, but, like sirens, the famous FEDERAL Beacon Ray lights have set the standards which others try to approach.

DEMAND THE BEST—

Specify FEDERAL SIGNALS

on your new equipment.

FEDERAL SIGN and SIGNAL Corporation

13602 S. Western Ave., Blue Island, Ill.

FIRE ENGINEERING

VOL. 112 NOVEMBER, 1959 NO. 11

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We're on the Move!

Expansion in the last few years —the growth of our publishing organization from three magazines to ten—means bigger offices are needed. So, for the many people who lend their talents to producing FIRE ENGINEERING, December will be "moving month."

After December 4 our main offices will be located at 466 Lexington Avenue, in the heart of Manhattan's Midtown East Side.

Only a few steps up the street from Grand Central Station, and not much farther from the East Side Air Terminal, our new location will be "right in the neighborhood" for those of our readers and advertisers who come to or pass through the city.

Won't you make a point, please, of remembering you're always welcome when you visit FIRE ENGINEERING's offices. Our telephone (ORegon 9-4000) will remain the same. Do call us when we may be of service to you.

Incidentally, with this issue FIRE ENGINEERING enters its 83rd year as the "Journal of the Fire Protection Profession." We extend to each and all our sincere thanks for your continued support.

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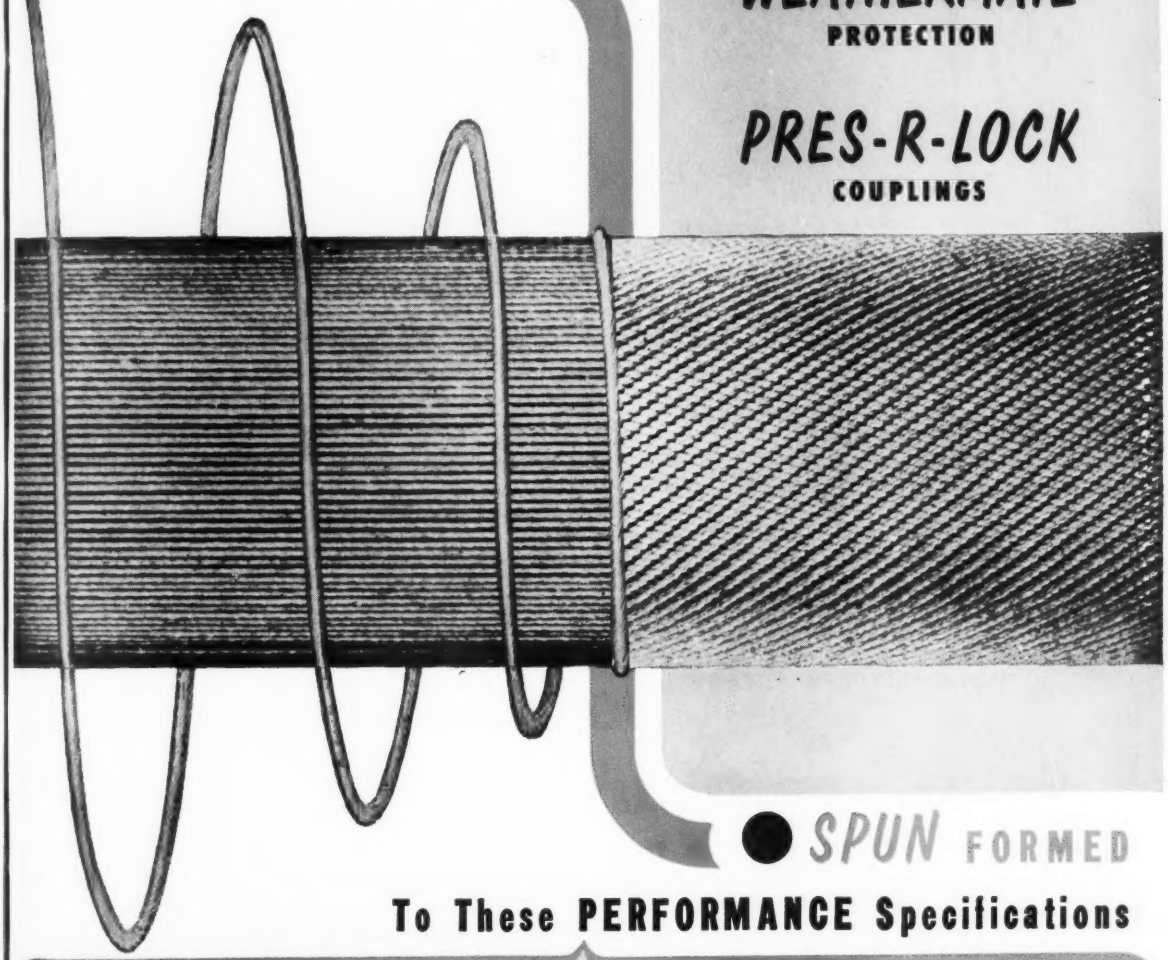
UNISPUN FIRE HOSE

● UNI FILLER

WEATHERMATE PROTECTION

PRES-R-LOCK COUPLINGS



● SPUN FORMED

To These PERFORMANCE Specifications

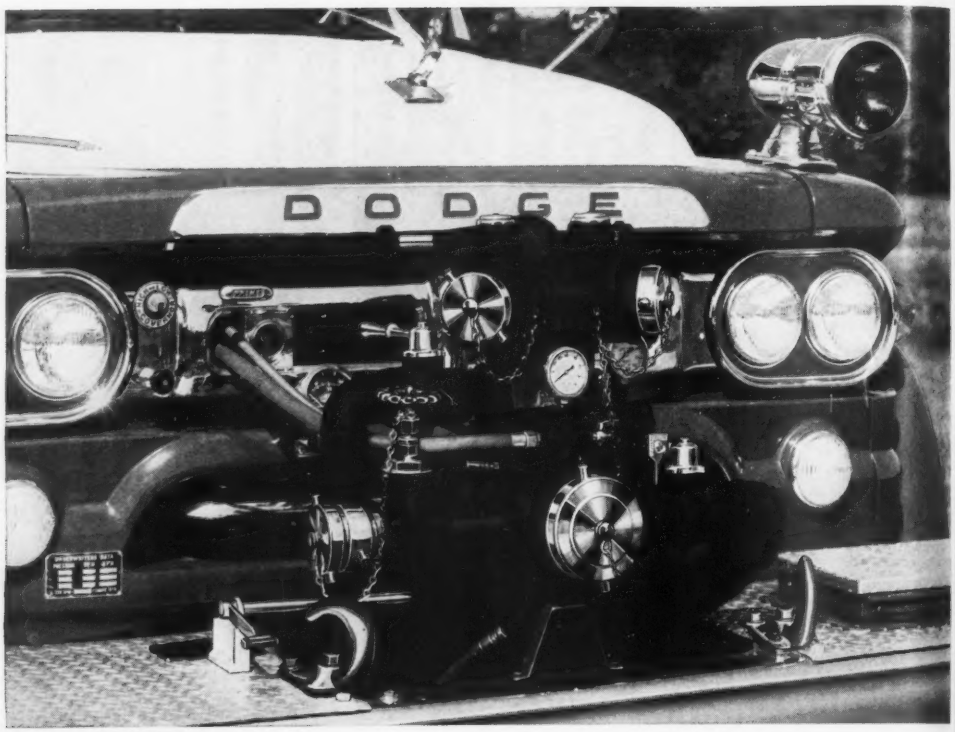
ZERO TURNS • ZERO WARP • ZERO RISE

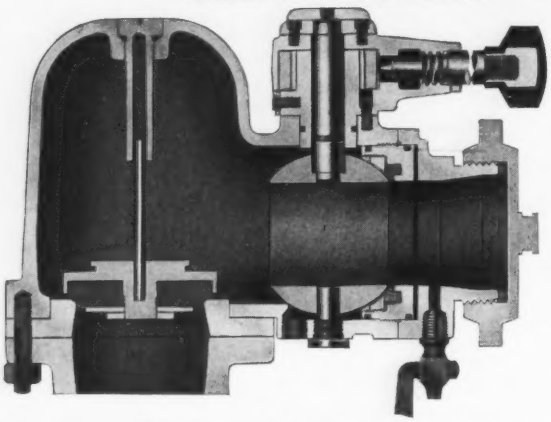
FABRIC FIRE HOSE COMPANY

Continuous Uniform Single Filament Filler Co-Axially Spun Fire Hose

SANDY HOOK, CONN.

IN CANADA *Pierre Thibault* CANADA, LTD., LTEE, PIERREVILLE, QUEBEC





BARTON-AMERICAN UA-50 Front Mounted Pumps

now offered with

BALL-TYPE LOCKING VALVES

Time-Proven Check Valve Retained

Barton-American ball-type locking valves move into position for any capacity or volume you need — lock in that position with a quarter turn of the handle.

The UA-50 gives you all the advantages of front mounted location: You can fight fires *on the move* with two or more hose lines. With drive wheels on solid ground you can "nose" down to pond or stream to draft water inaccessible to midship pumpers. Front pumps weigh less, use no body space . . . you can carry more water and equipment.

Precision built of best materials — yet *costs less* to buy and install because it's simpler. Investigate the Barton-American Type UA now!

WRITE TODAY FOR BULLETIN 8330-C

You get these advantages in the UA-50 Ball-type Locking Valve:

1. **Smooth-as-silk operation.**
2. **Regulates volume as you want it.**
3. **Locks positively in any position.**
4. **A quarter-turn of the handle locks it.**
5. **Check valve eliminates need to close hose lines to prime pump.**
6. **Rugged, heavy-duty construction.**
7. **Modern, smooth appearance.**

You also get UA Pump features such as: *Exclusive,* positive interlocking pump clutch that can't slip at a fire; both volume and high pressure to 400 pounds for effective fog streams; fast, reliable, engine vacuum primer; effective, frost-proof construction; plus many other UA advantages.

★ AMERICAN ★
FIRE PUMP COMPANY

P. O. BOX 219-A BATTLE CREEK, MICHIGAN

B.F.Goodrich

Take less time to lay lines with light hose

B.F.Goodrich hose is easier handling, saves time at fires

SECONDS after that truck arrives, B.F.Goodrich hose goes into action. The flexibility and lightness of this hose saves vital minutes when laying lines at a fire, makes it easier to handle under pressure, coil after a fire and rack back at the station. And it coils so tightly that hundreds of extra feet can be racked on a truck.

That B.F.Goodrich hose is actually 22% lighter, much more flexible and stronger than ordinary hose. The flexibility and lightness comes from the Dacron fiber used as "filler" cords which go around the hose and carry the load under pressure. These cords are thinner, yet stronger than cords used for reinforcement on heavier, bulkier hose. It is tested to 600 pounds pressure and can stand up to twice as much pressure without bursting.

This hose also has B.F.Goodrich end protection. This extra layer of hard-woven cords extending 12" from the coupling adds 100% more strength to the coupling area.

Another important safety factor which can be specified in B.F.Goodrich hose is Superseal protection for areas where excess moisture is a problem. It gives 10 times more resistance to mildew and rotting than ordinary treatments, prepares the hose for all kinds of weather. And, most important, the Superseal treatment costs no more than ordinary treatments.

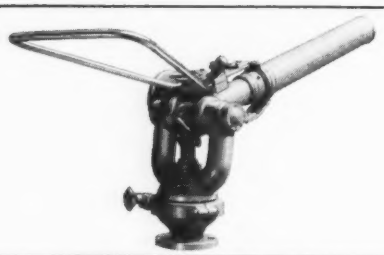
For a hose that's light, flexible, and will last longer than any other hose sold, get B.F.Goodrich hose with the Superseal protection. Your B.F. Goodrich distributor can tell you more about it, or write *B.F.Goodrich Industrial Products Co., Dept. M-694, Akron 18, Ohio.*

B.F.Goodrich *fire hose*

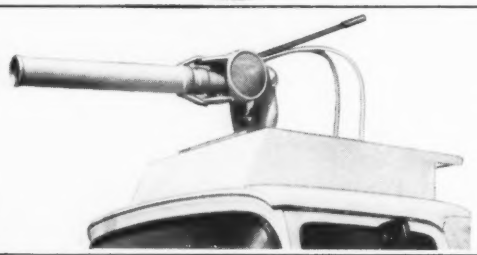
Most Complete Line of Specialty Turrets on the Market!

...All Rockwood Turrets Discharge FogFOAM
Solid FOAM Stream — WaterFOG — Solid Water Stream

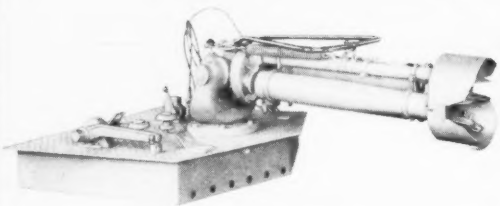
Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units . . . greater remote extensions for special applications.



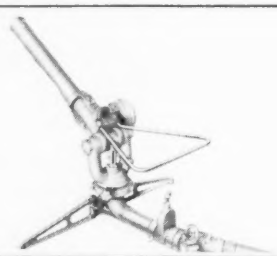
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER COMPANY, Portable Fire Protection Division, 445 Harlow Street, Worcester 5, Massachusetts.

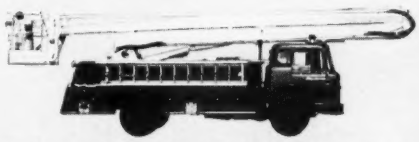
ROCKWOOD SPRINKLER COMPANY
A Division of The Gamewell Company
Engineers Water ... to Cut Fire Losses
Distributors in all principal cities.

ONLY Pitman Snorkel OFFERS YOU THESE 10 OUTSTANDING ADVANTAGES...

1. 1,000 lbs. capacity, any boom position
2. 1-hand control of all boom movement
3. 2nd set of controls at ground level for extra safety
4. Ground-to-platform communication system*
5. Hydraulic, self-locking "A" frame type outriggers
6. Heated boom for cold weather operation*
7. No back pressure problem on platform
8. Continuous 360° operation
9. Can be installed on a truck of your choice
10. Piping that carries water to platform installed at factory

*Optional

The amazing Pitman Snorkel offers new and greater-than-ever safety, speed and versatility for fire fighting and rescue work. Up or down, right or left, in or out. Now, quickly and safely, a fireman can put himself exactly where he wants to be. Why not get all the facts now. Just fill out and mail the coupon below. **Attention Dealers!** Some territories still available. Write today.



With boom folded, relatively short overall length gives you greater maneuverability on city streets.

pitman snorkel is a product of

Pitman MANUFACTURING COMPANY

please send full details on snorkel

Name..... Title.....

Department..... (or company)

Street.....

City..... State.....

mail to: **SNORKEL FIRE EQUIPMENT CO.**
dept. FE Grandview Missouri

The Scientific Approach

. . . choose from the complete line of

HPV...high pressure fog and volume
with the double power of 2 great pumps

Two proven methods — high pressure fog that cools, smothers and isolates flames, plus Underwriters' approved volume streams — give you an unbeatable combination. The John Bean High-Pressure Fog pump delivers 60 GPM at 850 PSI pump pressure — and the John Bean Class A centrifugal volume pump is available for 500, 600, or 750 GPM performance.

for that INSTANT PUNCH

John BEAN high-pressure fog apparatus

The instant punch of John Bean high pressure fog stops fires **before** they grow. Microscopic size fog particles provide maximum heat absorbing effect with **any** type fire. This scientific approach, with the original John Bean high pressure fog, extinguishes 95% of your fires faster — with little or no water damage. That's why so many fire departments select John Bean fire apparatus.

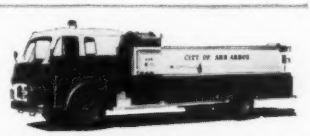
HPF . . . high pressure fog equipment that makes water go 10 times as far. Fighting fires on the run or stationary, there's no problem of water source. One gallon of water as high pressure fog has the fire killing capacity of ten or more gallons discharged in a conventional stream.

LITTLE BEAN . . . high pressure fog plus extra mobility for instant action

Built for speed, compactness and easy handling, the "Little Bean" high-pressure fog fire fighter is ideal for your "first out" unit — and as an all-around fire fighter for smaller and rural departments — for the fast knockout of forest, grass and brush fires — for airport and industrial plant protection.

MULTI-PURPOSE high pressure fog equipment

Apparatus shown at right is typical of special purpose units engineered by John Bean. These fire fighters are designed to accommodate all types of accessory tools and emergency equipment such as salvage and rescue equipment, forceable entry tools, ladders, light generators, flood lights, two-way radio, walkie-talkie, acetylene cutting torches, portable power saws and drills, first aid equipment, and regular fire department tools and appliances.



COMBINATION LADDER and RESCUE UNIT

COMBINATION SQUAD and RESCUE UNIT

John fmc **BEAN**

Lansing 4, Michigan San Jose 1, Calif.

ORIGINAL HIGH-PRESSURE FOG FIRE-FIGHTERS

Food Machinery and Chemical Corporation

SEND COUPON for details TODAY

John BEAN Division of Food Machinery and Chemical Corp.
Lansing 4, Michigan San Jose 1, California

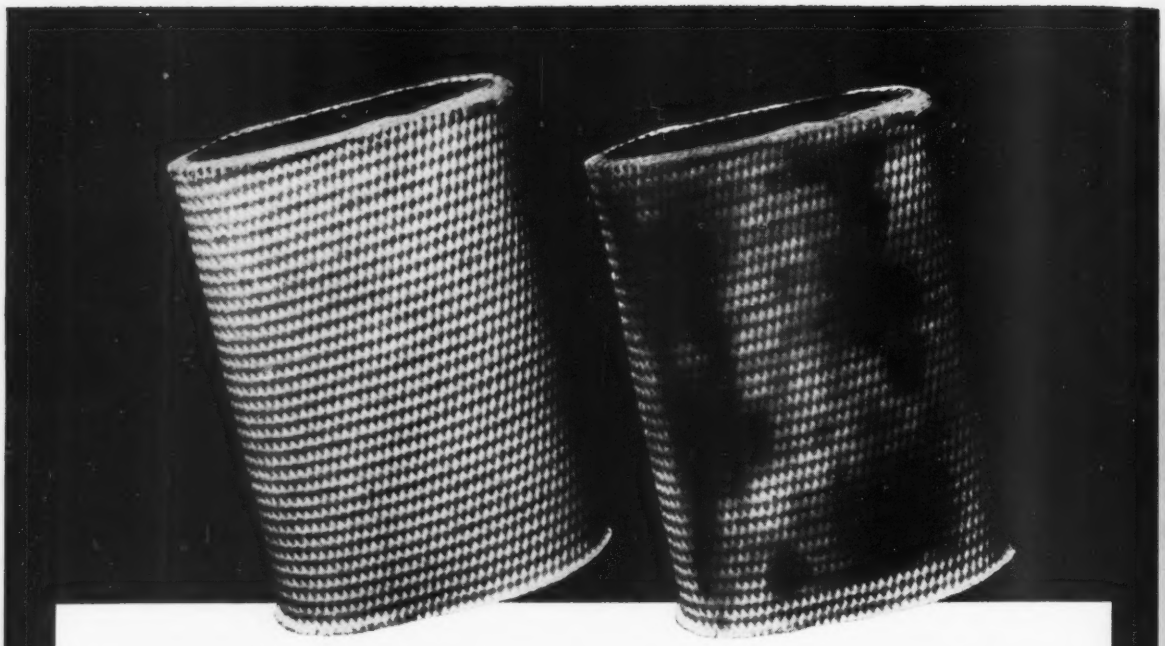
Please send me literature on the following fire fighters:

☐ HPV — high pressure fog and volume ☐ HPF — high pressure fog
☐ Little Bean high pressure fog ☐ Multi-Purpose high pressure fog equipment

Name_____

Address_____

City_____ State_____



WHAT MAKES THE DIFFERENCE IN THESE TWO?

Provar treatment! That's the difference.

Saturated with water, both samples were exposed to moist atmosphere, under conditions favorable to growth of mildew . . . *for six months, day and night.* The unretouched photos dramatize the effectiveness of the treatment.

Provar is an exclusive process developed by Republic Rubber for prevention of mildew and rot on Fire Hose. The six-month test confirmed the many, many service records that Provar treatment will not wash out or lose its effectiveness.

Illustrated below—the four fine grades of Municipal Fire Hose made by Republic Rubber. All are supplied with Provar protection against mildew and rot.

GOOD FIRE HOSE BY REPUBLIC RUBBER

CHAMPION—Dacron filler, test pressure of 600 lbs. Best grade Fire Hose made.

TOWER — Dacron filler, test pressure of 400 lbs.

CHARIOT — Cotton yarn, test pressure of 400 lbs.

TARGET—Cotton yarn, made to meet demand for heavy-duty hose at moderate cost.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

Today's smallest two-way mobile radio - actual size

New General Electric Transistorized Progress Line

General Electric's new Transistorized Progress Line will fit in more places, in more different positions, than any other two-way mobile radio you can buy today.

Not only is this the world's smallest, lightest commercial two-way mobile radio, but standby battery drain is so low you need never turn off your TPL mobile unit, just like the clock in your car. You install no special generator, use less gas, require fewer engine jobs.

TPL is the first two-way radio that transmits up to 75 watts of power in high band . . . the first that really fits under the dash . . . the first to realize the full benefits of transistorized design (no more than four tubes) . . . the first to eliminate bulky cables through new one-piece design of receiver control and transmitter . . . the first with shielded dirt-free ventilation.

The new General Electric TPL ushers in a new era of convenience and reliability in mobile communications. Don't miss all the exciting details. Write General Electric Company, Communication Products Department, Section 12119, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

Communication Products Department

Powhatan's DURA-FOG Nozzle

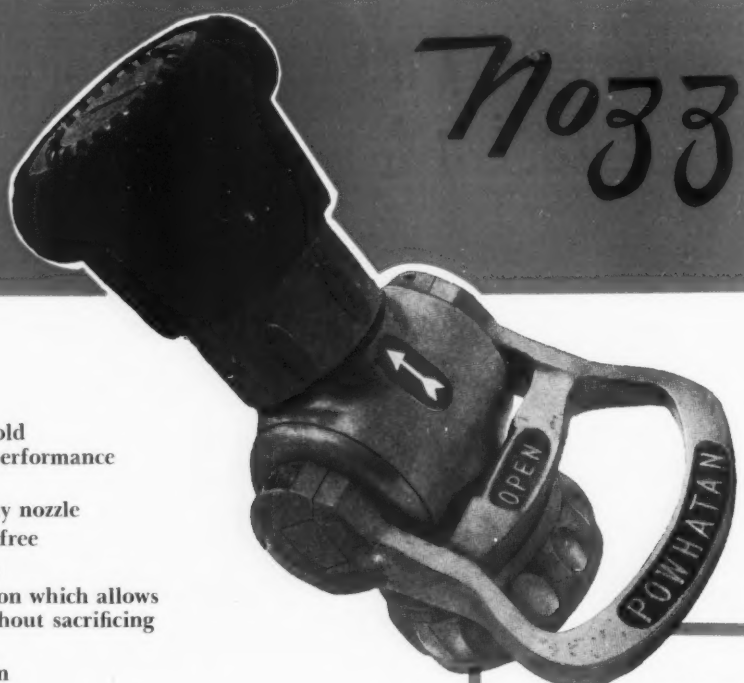


PLATE NO. 261

CHOICE OF SWIVEL OR SOLID BASE

- Each nozzle sold has a 100% performance test
- A strong husky nozzle
- Maintenance free
- Greater reach
- Finer dispersion which allows less GPM without sacrificing effectiveness
- Denser curtain
- No kick back
- Operates easily under high pressure

TRY IT OUT!

You can—by simply writing us and telling us you want to see and test it. Write today!

OVER A MILLION SHUT-OFFS AND NEVER A LEAK!

Dura-Fog Nozzles have been thoroughly bench tested, to assure dependability. We strived for 250,000 shut-offs, actually tests have gone over a million with no leak!

FLOW IN GPM AT 100 PSI NOZZLE PRESSURE

Size	Straight Stream	30° Fog Pattern	60° Fog Pattern	90° Fog Pattern
1″	20	22	32	35
1½″–60	57	60	72	88
1½″–100	95	100	105	107
2½″	135	165	190	225

REG. U.S. PAT. OFF.

POWHATAN BRASS & IRON WORKS

RANSON, WEST VIRGINIA

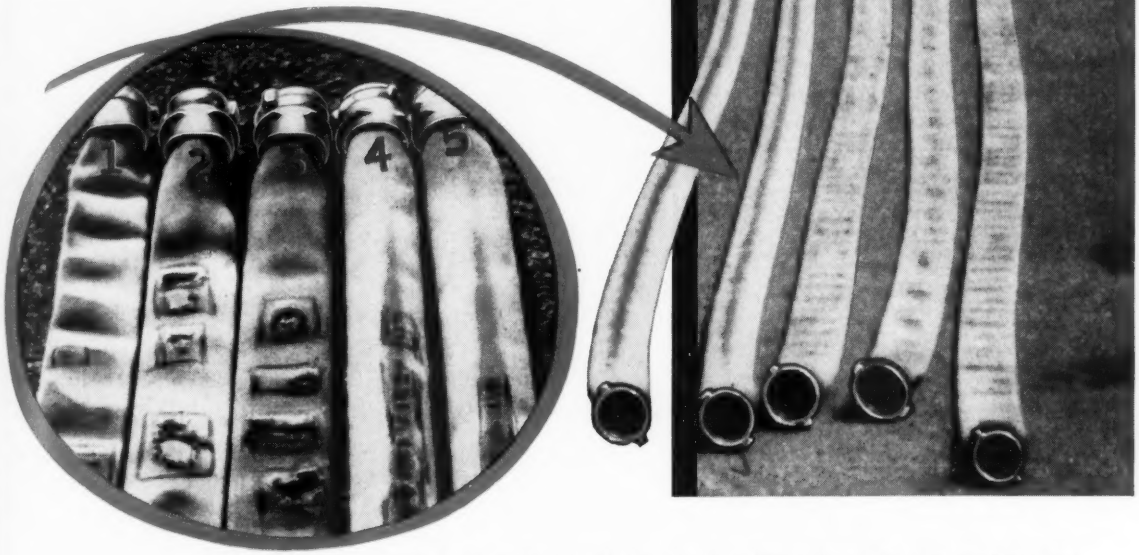
OUR SIXTY-SEVENTH YEAR

In The Same Location Since 1892

REG. U.S. PAT. OFF.

New, Bonded All-Dacron* Ambassador Ranks best in tortuous abrasion test!

50-foot lengths of hose were dragged on asphalt pavement at speed of 5 miles per hour. Test included 5 types of 2½" hose: 1. Fyr-Fyter 100% Dacron, Tuff-Weave industrial, single jacket; 2. Dacron/Cotton, double jacket; 3. Cotton, double jacket; 4. 100% Dacron, double jacket (unbonded); 5. Fyr-Fyter Ambassador, 100% Dacron, BONDED *double jacket.*



Inside jacket was exposed in hose No. 2 and No. 3 at 3 miles; in hose No. 4 at 6 miles. Test was stopped after 10 miles. All hose except Nos. 1 and 5 appeared to have exceeded their maximum service life. Burst tests further proved Nos. 2, 3 and 4 unserviceable. Hose No. 1 and No. 5 showed no appreciable loss in burst strength!

This tortuous test proves you can expect more durability and longer service life from Fyr-Fyter's new Ambassador Hose. Its rugged resistance to dragging and scuffing is due to an entirely new way of fabrication. Both inner and outer jackets are 100% Dacron which makes them practically immune to wear. The two jackets are also permanently rubber bonded. This means they can't slip or rub to cause any concealed wear. The bonding also gives added falling ember protection. Bonded, 100% Dacron hose is an exclusive product of Fyr-Fyter!

NO DRYING REQUIRED

The extremely low absorbency of all-Dacron jackets eliminates drying operations, and also the need for stand-by hose. Rack it right after use with no fear of mildew.

Other outstanding Ambassador features include lighter weight for easier handling, amazing strength without bulk, flexibility without kinking, compactness and resistance to chemicals. Write today for complete details and prices. **DuPont trademark for its polyester fiber.*

THE FYR-FYTER COMPANY

Branches, representatives and distributors in all principal cities

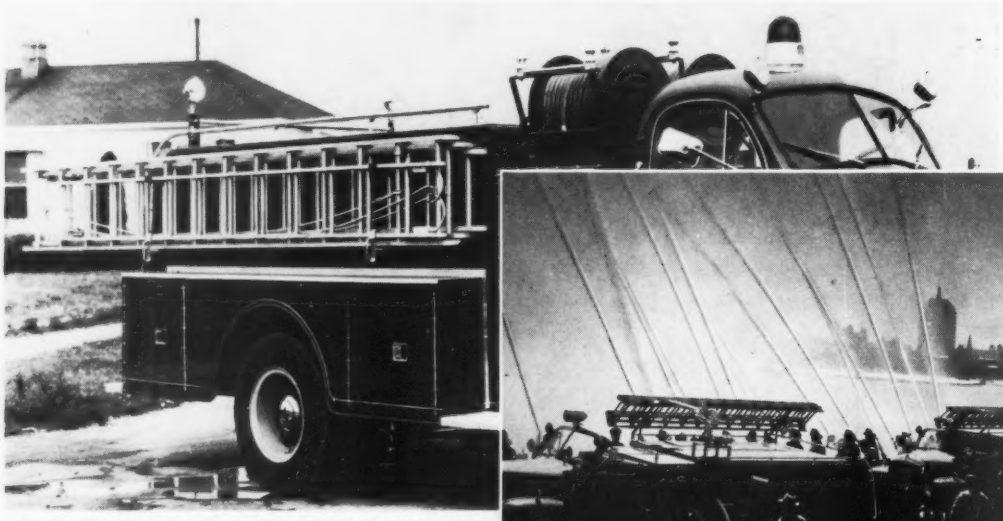
Atlantic Coast Regional Office:
P.O. Box 750, Newark 1, New Jersey

Central States Regional Office:
221 Crane Street, Dayton 1, Ohio

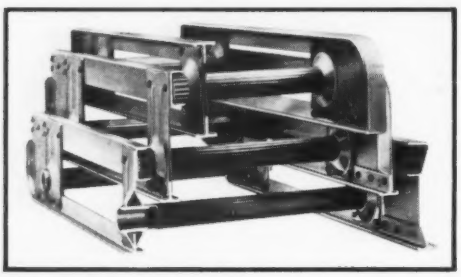
Pacific Coast Regional Office:
132 Hawthorne, San Francisco 7, Cal.

Fyr-Fyter

These versatile Pumpers are equipped with lightweight Alco-Lite Ground Ladders

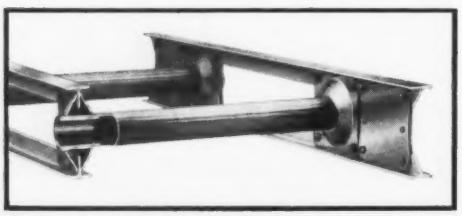


The Pumpers shown are products of Mack Trucks, Inc., Sidney, Ohio



Operate Automatically

Ladder sections extend — lock and unlock simultaneously. Spring loaded locks operate automatically. Channel slides the entire length of the ladder keep sections from becoming disengaged.



Permanent Rung-to-Rail Construction

Exclusive expansion bushing, rung to rail construction prevents rungs from twisting, turning, or breaking off.

They're lighter, easier to handle

The Alco-Lite Aluminum Ladders on the Mack Pumpers above feature open side rail, T-Channel design. All excess, weight adding bulk is eliminated. Only exclusive, Alco-Lite double gusset plate, expansion bushing construction makes this trim, modern design possible. These ladders more than meet any accepted tests for strength and safety.

Maintenance is almost negligible with Alco-Lite Aluminum Ladders. They are not affected by water, moisture, fumes or gases. They will not warp, rot, splinter, or burn.

Because they are lightweight and trim, Alco-Lite Aluminum Ladders are easier to handle and easier to lift. They save precious minutes and require less physical effort when used at fires.

When you want easy to handle, safe, and almost maintenance free fire ladders, specify Alco-Lite Aluminum Ladders.

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To fight fire faster, Ansul has introduced a dramatic new concept in fire extinguisher design—the unique MONITOR dry chemical unit. Created to fill a basic need for low cost, effective first-aid fire protection, MONITOR packs the fire-killing power of 8 ordinary carbon tet units or a 1½ gallon foam extinguisher. Exclusive features include a disposable recharge shell . . . U.L. Listed recharge unit . . . space-saving spherical shape . . . simple operation. MONITOR comes in red or white for maximum visibility in any location. Your Ansul man has complete details on this dramatically different first-aid fire extinguisher. ANSUL CHEMICAL COMPANY, MARINETTE, WIS.

new products, new ideas for better fire protection

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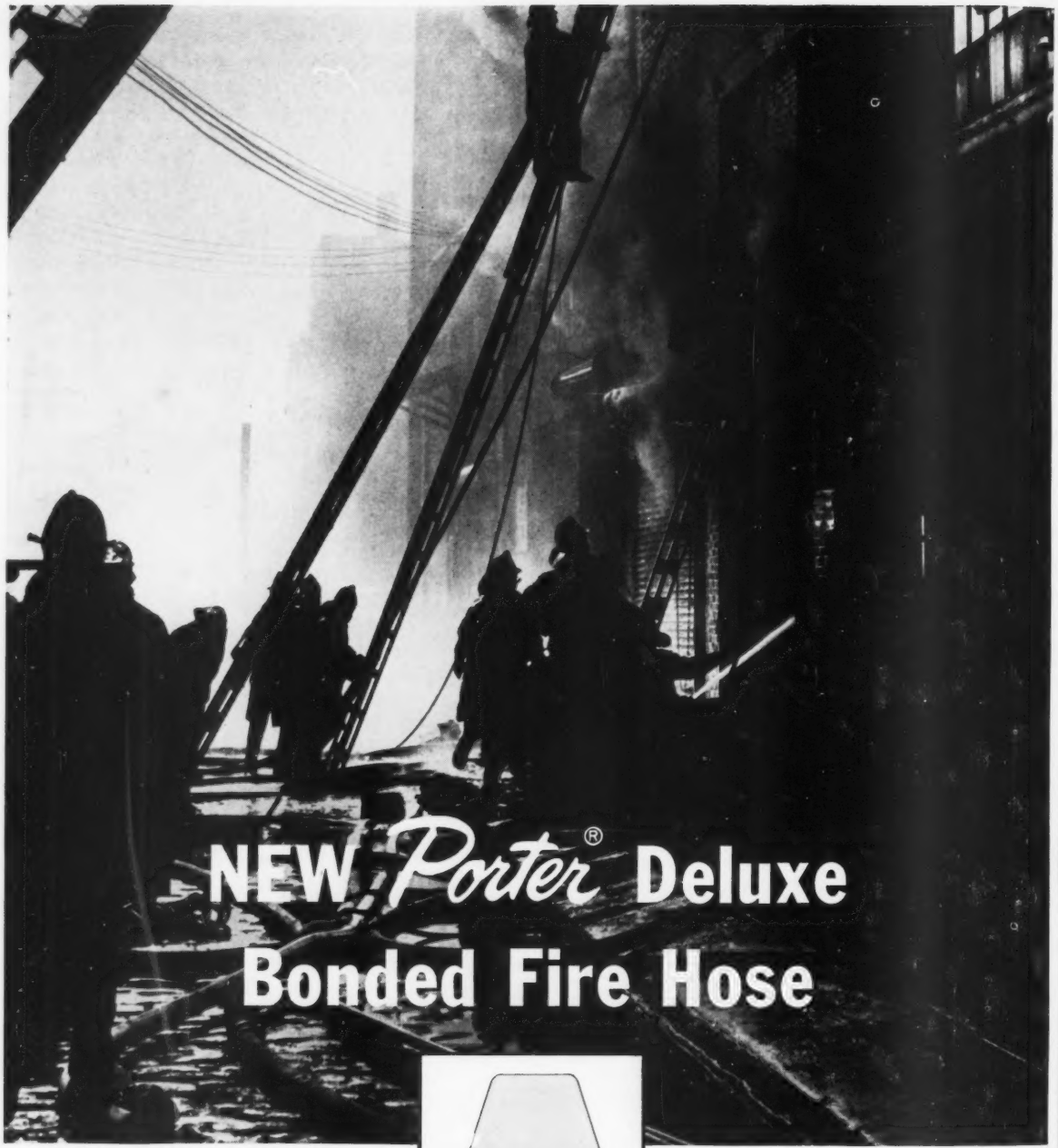

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. . . eliminates need for drying.

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It's made with a rubber bond between the two jackets of DuPont "Dacron" polyester fiber, which laughs at mildew. Pack it away soaking wet without the fear of deterioration that is common to cotton-jacket hose.

A rubber-bonded double jacket of "Dacron" all around is the secret behind the new mildew-proof Porter Deluxe Bonded Fire Hose.

And drag new Porter Deluxe Bonded Hose to test its scuff-resistance! At least five times more wear can be put on this remarkable hose before the two bonded jackets begin to show it.

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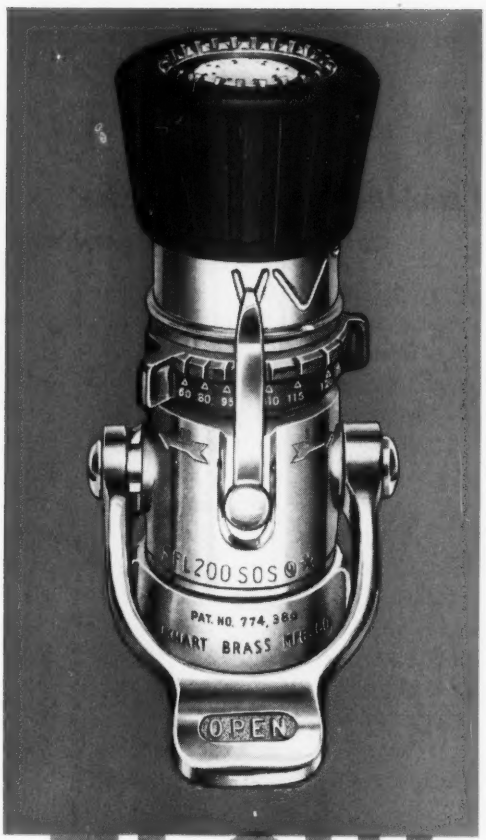
Select-O-FLOW—Elkhart's most important nozzle development since the first Mystery Nozzle in 1936. In one nozzle you get all of Elkhart's proven benefits plus a new variable gallonage feature that allows you to dial the selected gallonage from 60 to 125 G.P.M. at 100 p.s.i. without shutting down the line. Underwriters' approved, Select-O-FLOW also has stream indicators for choosing wide to narrow fog patterns and straight stream too.



Select-O-FLOW

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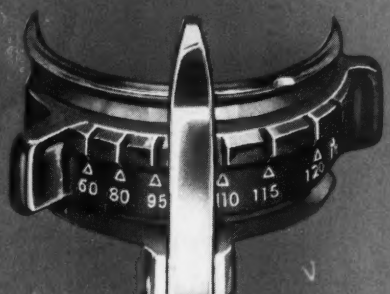
- Underwriters' approved.
- Non-clogging—no screen required.
- Optional base swivel or solid.

Variable Gallonage Dial



Merely turn dial indicator and select variable gallonage from 60 to 125 G.P.M. at 100 p.s.i. without shutting down the line.

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More than half a century of fire fighting progress

AIR BRAKE

Still another reason for the enthusiastic demand for Mack fire apparatus

On your next fire apparatus specify air brakes!

Air brakes on Mack apparatus cost less to maintain than hydraulics. They're installed by craftsmen with the most intimate knowledge of such systems.

Air brakes on Mack apparatus provide safe, sure stops . . . ten-second build-up for immediate operation . . . minimum time lag before brakes take effect.

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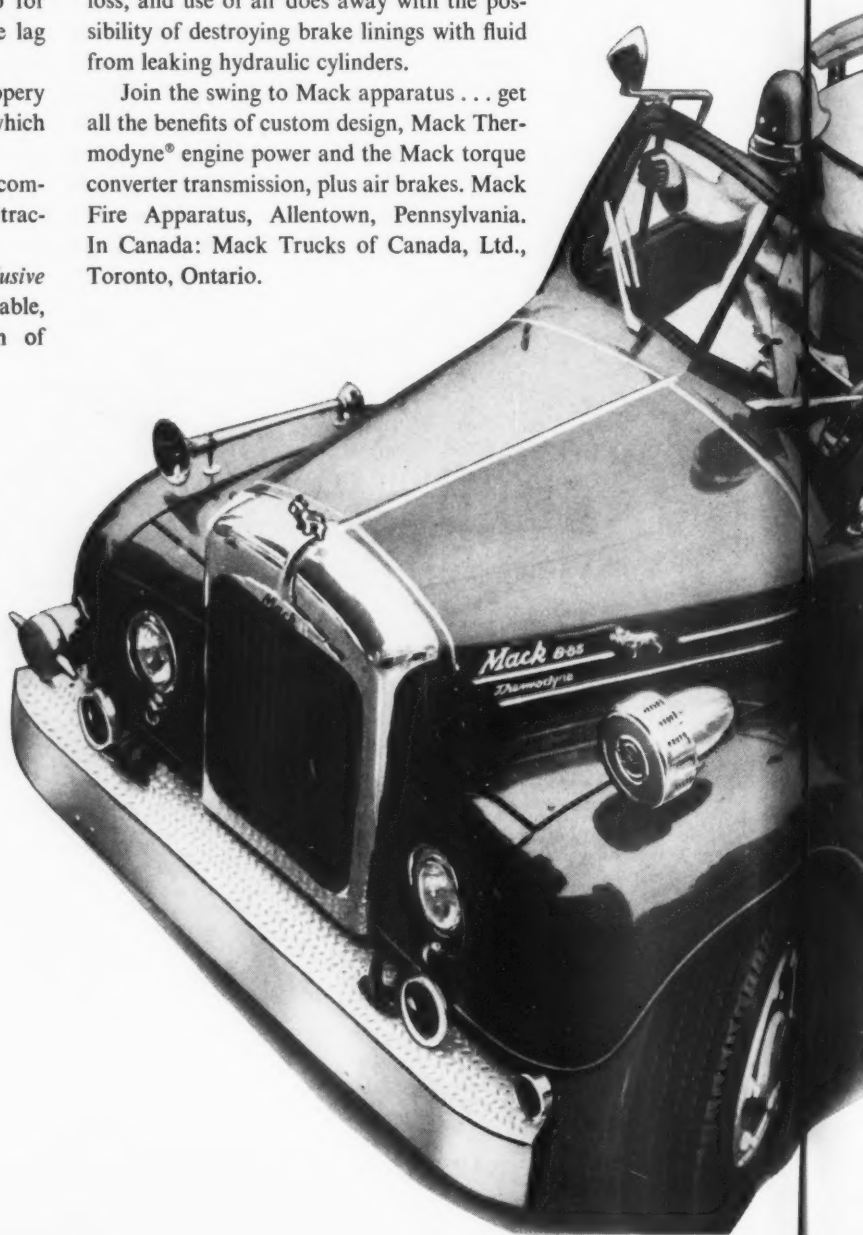

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All these are times when you could have used special bunker clothing—hood, gloves, coat, or complete suit—made of "Scotch•shield" Brand Aluminized Fabric. This is the amazing material that *reflects 90% of radiant heat*—doesn't absorb it. It's light weight and extremely flexible. Rescue clothing made of this reflective-protective material can be put on quickly and you can move around easily . . . get the job done fast and efficiently . . . not always possible in conventional rescue gear.

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Send the coupon for free, informative booklet, "When It Takes More Than Courage."

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Safety Clothing for Firemen

The Original STRIPED SAFETY COAT

The striped safety coat for firemen is an Original Midwestern development — first in the field — a leader ever since its introduction 19 years ago.

The BRILLIANT YELLOW stripes are actually rubberized into the black rubber . . . an exclusive feature that defies comparison with substitute or imitation models where the stripes are glued, sewed or painted on the material.

When working under hazardous conditions in smoke, fog, dust or darkness, firemen deserve the superior quality, design, comfort and safety features offered by the Original Midwestern Safety Coat.

Many Fire Chiefs who insist on the best of protection for the men of their department specify MIDWESTERN SAFETY garments to the last man because every outstanding Midwestern feature is original. All fabrics are extremely soft and flexible and have the qualities to stay that way at varying temperatures. You can always distinguish a MIDWESTERN SAFETY garment by the soft feeling of the material in both rubber and fabric type garments.

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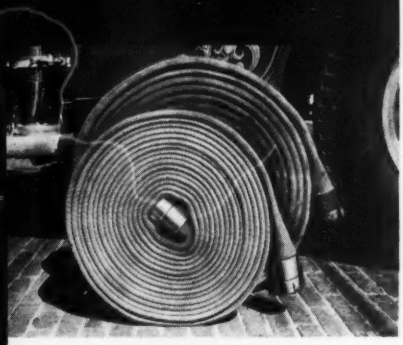

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Which hose is always ready for the next fire?

Unless the white untreated hose is dried within a short time it will be subjected to attack by mildew and rot. This cannot happen to the other hoses. They are protected by Acme-Hamilton's Sealcott "W" mildew resistant treatment. Because the mildew fungi cannot penetrate the cords in the jackets, Acme-Hamilton hose is always ready for service.

Energy 600-lb. test hose treated with Sealcott "W" is dependable and easy to maintain. Sealcott "W" penetrates each fiber of both jackets, seals them from mildew and moisture. Energy packs compactly, too. Jackets have Dacron* filler cords which reduce bulk by ⅛, weight by 20%. * Reg. Trademark Du Pont Co.
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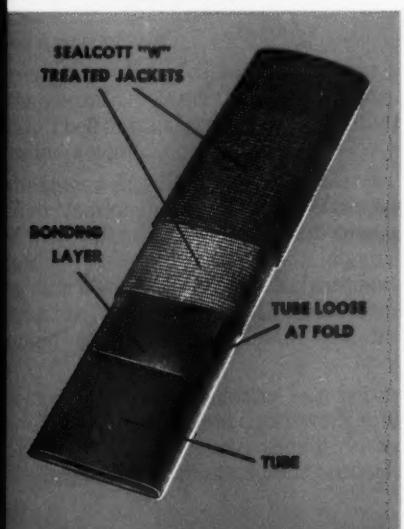

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Fire Chief G. L. Sartain and Fire Alarm Superintendent B. M. Pointer of Tulsa, Oklahoma (left to right), check operations in fire alarm headquarters. City's modernized Gamewell System unerringly guides 21 engine companies, 5 ladder companies, and 4 chief cars.

How Tulsa's Fire Fighters get the edge on fires

In Tulsa, Oklahoma, a modernized Gamewell Fire Alarm System gives fire fighters a real jump on fires. It alerts precisely the number of companies needed to fight a blaze . . . and permits them to respond to the alarm without even having to check its location!

When the alarm comes into the alarm center (above) the dispatcher merely checks a card file for company assignment. Then by radio he quickly and accurately dispatches the proper assignment of men and equipment. Code signal confirmation of the alarm is then transmitted to all stations. The efficiency of the new system will greatly benefit property owners in the city of Tulsa . . . faster response to each alarm will give the fire fighters an "edge" on the fire.

The new Gamewell System was precisely tailored to the specifications of Tulsa Fire Chief G. L. Sartain and Fire Alarm Superintendent B. M. Pointer. It includes 8 alarm circuits, 24 box circuits, a new PBX system, and voice dispatching equipment. There are now 264 street type boxes as well as 65 Master Boxes located in schools, public buildings, industrial plants, hospitals, and institutions.

Rapidly expanding Tulsa had simply outgrown its former 25-year-old Gamewell Fire Alarm System and wisely took steps to keep lives and property adequately protected. Are *your* city's fire alarm facilities keeping pace with growth? A Gamewell Survey will answer this question. No obligation. Write THE GAMEWELL COMPANY, 1245 Chestnut Street, Newton Upper Falls 64, Mass.

Gamewell®

FIRST...WHEN SECONDS COUNT

VOL. 112, NO. 11

FIRE ENGINEERING

THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

NOVEMBER, 1959

Are Sprinklers the Answer to School Fire Safety?

Nearly one year has passed since the tragic "Our Lady of The Angels" School fire which occurred in Chicago on December 1, 1958. Due to the nationwide shock which followed this disaster, much publicity has been given to efforts to prevent such a tragedy from ever happening again and some progress has been noted. Yet in spite of all warnings by national fire protection authorities, exceptions to many of the suggested safety measures have been expressed in some areas. As a general rule these have been based on the economic factor. However, some opposition has questioned the evidence that exists to support recommended proposals for safeguarding life.

School fire safety has been subjected to much statistical research in recent months to catalog the necessary supporting evidence. One example of this work is contained in a brief submitted by the National Automatic Sprinkler and Fire Control Association to the Building Research Advisory Board of the National Academy of Sciences-National Research Council for use during the Conference on Safety to Life from Fire in Elementary and Secondary Schools. The association pointed out to the conference that the fire records of this country show that a school fire breaks out every two hours of the day. Further it stated that there have been 957 recorded deaths in 94 unsprinklered schools since 1900. During the same period there have been 167 fires in sprinklered schools without loss of life!

The association then established their reasons for a fire control strategy which would be geared to meet unpredictable fire starts in school buildings. It pointed out that an analysis of the place of origin in 300 typical school fires indicated no intelligible pattern which will permit planning for a "zone" defense. Of some 18 locations where the fires started, classrooms, with 16 per cent, led the list, followed by unused areas, furnace rooms and storage areas in that order as the major places of origin. The remaining locations were so numerous that the association felt that only complete sprinkler protection would provide any certainty for a safe school building.

Elsewhere in these pages is a report of the recently concluded Los Angeles school fire tests which have provided a wealth of information concerning fire behavior in a typical educational structure. It must be noted that the research carried out during these tests is the first recorded instance of actual burning experiments of a common-type school building. Its true impact cannot be fully measured at this moment. Only time and new experience will draw out the findings to their fullest value.

The Los Angeles Fire Department, faced with school fire safety problems as serious as those which burden practically every community in this country, found a way to scientifically test building materials and methods as well as fire protection practices. In cooperation with many other interested agencies and companies, it has conducted actual fires in a school building and documented the evidence obtained. Many interesting conclusions have been arrived at, which in the main, support previous contentions of fire service officials.

According to press accounts the final results of the Robert Louis Stevenson School fire tests vary little from the original observations expressed by Los Angeles Fire Marshal Raymond Hill at the NFPA's Atlantic City conference earlier in the year. At that meeting, Hill stated that the only time during the fires that the observers found the test building tenable was when complete automatic sprinkler protection was provided. He has amplified this further by the comment that complete sprinklers in a building maintain a low temperature during a fire and help prevent a rapid buildup of smoke and gases which can otherwise impede evacuation. The tests showed that when sprinklers were installed only in exit ways and not in the actual fire area they did not prevent dangerous smoke and gases from entering school corridors.

The tests have proven the importance of rapidly evacuating schools and emphasize the hazards that face children during this critical period. This is based upon the practical realization that the time required for a fire to cause an alarm or to be discovered, plus the additional time necessary for fire companies to respond to the scene once an alarm has been received, is too long to guarantee the life safety of the pupils. Marshal Hill sums up this conclusion by the comment that it is futile to expect that fire fighters can reach the scene of a major fire in time to make extensive rescues. Built-in safeguards are a necessity for once started, fire waits for no man, woman or child!

Hlow O'Brien

First fire in test series was set in classroom of two-story wing of the school building. In all, 75 test blazes were set in this section and an additional 75 in the three-story section at left—*Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.*

What Happens When a School Burns?

A report of the recent Robert Louis Stevenson School fire tests in Los Angeles

By JACK LINCKE*

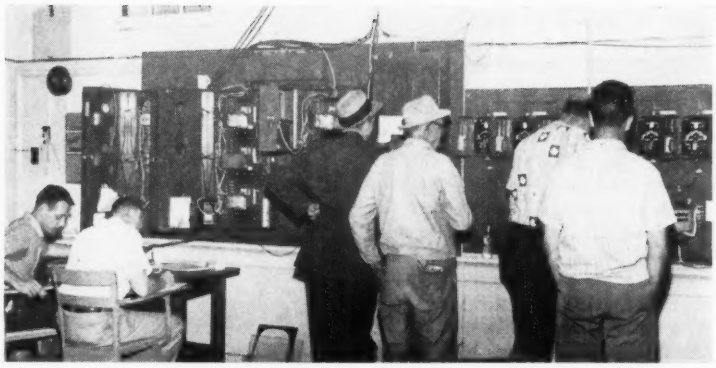
WHAT HAPPENS in terms of lethal flame, heat and smoke spread within a blazing school building and what to do about preventing school fires, have been learned for the first time in America in a just-completed series of fires in an actual school building. No such experiments have ever been made before in this or any other country. Using the recently condemned three-story Robert Louis Stevenson High School in East Los Angeles, the city's fire department, in conjunction with the State Fire Marshal's office, has set 150 major blazes in the heavily instrumented building.

The experiments may result in the most widespread revisions of U. S. school safety and design codes that have ever emanated from a single source, according to Raymond M. Hill, Los Angeles fire marshal, who has been in charge of the project.

Fires have been set in the basement and on each of the three floors in classrooms, corridors, janitor's closets and at the base of stair shafts. Conditions have been varied to provide the widest possible range of circumstances. These have included situations in which the building has been tightly closed, as in winter, and others when it has been opened up, as in summer; combinations with some windows and doors open and some shut; days of flat calm and others with breezes up to 15 knots. Various sprinkler utilizations have been tried. Draft and water curtains have been used. Tests have been run with opened and with heat-actuated vents. Various sizes of vents and vents fitted with aspirators have been tried. Several kinds of fire alarm and smoke detection systems have been tested.

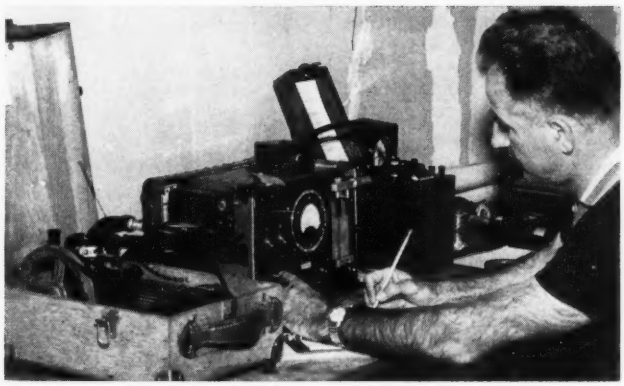
Throughout all fires, 24 thermocouples have been strategically positioned at three levels on each of the three floors to detect temperatures. Smoke-sensing and pressure measuring units have been utilized. From the instant of setting each fire, tem-

* The author is an architectural and engineering writer who participated as an observer-recorder during the Los Angeles school fire tests. The conclusions drawn are those of Raymond M. Hill, California deputy chief fire marshal and all the material has been checked for accuracy by Marshal Hill and his associates who were concerned with the tests.



View of a portion of the instrumentation provided. Included are automatic temperature recorders, smoke density gages, fire detection and sprinkler study instruments
—*Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.*

Observers study flames through quarter-inch thick, wired safety glass ports on one-hour fire barricade erected in a corridor. One fireman watches data of manometer which records pressure on fire side of barrier—*Official Los Angeles F. D. photo by George W. Homer*



Captain Leo Najarian, in charge of instrumentation, studying pressure readings and automatic analyses of combustion gases
—*Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.*

peratures, smoke densities, vacuums and pressures have been recorded on timed graphs. Captain Leo K. Najarian was in charge of instrumentation of the school.

The 34-year-old building has been an excellent laboratory because its design and construction materials have offered varied study opportunities. The exterior is brick. Classroom floors are wood; corridor floors are concrete. Corridor walls are hollow tile and classroom partitions are wood stud with metal lath and plaster. Classroom ceilings are metal lath and plaster and corridor ceilings are the same, but with a covering of fiber acoustical tile. Stairways are concrete without stairwells or enclosures. The roof structure is wood with a composition-and-gravel surfacing.

In setting up the fires, loads of wood varying from 1,000 to 2,000 pounds (the weight of the combustibles in the average classroom) of warehouse pallets have been used, according to Captain John M. Lobenstein who has been in charge of preparing for the tests and of after-test restoration. The pallets have been stacked in three piles so the first ignited the second and the latter ignited the third. This simulated a normal fire-spread rate. The pallets were piled on top of 2 feet of water-soaked sawdust to provide some degree of floor protection. This was done to get as many fires as possible without destroying the building.

Perhaps never before in the history of the country have so many dedicated men worked so industriously and painstakingly to produce answers to the question: "What happens when a school catches on fire?" To quote Marshal Hill: "Under actual conditions, we never have a chance to study the start of a fire. By the time we reach the building, the blaze is well under way. For the first time we have been enabled to study a fire in a full-scale building from the instant of kindling, throughout its generation, during the peak and during the decline."

Battalion Chief John C. Degenkolb, in charge of Los Angeles school fire inspections, who first conceived the tests and obtained the use of the school for them, and has been in charge of test direction. According to Chief Degenkolb, it has been proved that if the amount of combustibles in the average classroom were placed in an absolutely fireproof building and ignited, they could produce sufficient heat, smoke and gas to kill most, if not all, of the occupants of a single or multistory building.

Points of origin

In a school we have a common sequence; a fire starts in a workroom, laboratory, janitor's closet or in a ventilating shaft. It smoulders until it

builds up enough pressure to burst a transom or a door, then oxygen rushes in and provides an explosive impetus. Lethal smoke and heat sweep into a hall cutting off escape. If classroom doors are open, survival is doubtful. If doors are closed and are not the fire-resistant type, or if there are transoms over them, the gas will burst one or both. This process applies equally to multistory or single-story structures.

The essence of the problem is time. Seconds are terribly critical and there is no allowance for delayed fire detection, delayed alarms, indecision or ineffectual evacuation procedures, even in a single-story building. In any plan in which pupils must exit into a hall from classrooms on both sides of it, even though the escape distance may be as short as 50 feet, there is grave danger if the fire is the result of an explosion, or if it has smouldered and then has broken its bounds.

We are not solely concerned with flames reaching pupils. They are in just as much peril from smoke and incandescent gases. The duration of the latter is not as important as their existence at all. If a fire alarm is given and children are immediately evacuated into an inside corridor, death can be instantaneous from hot gas, although flame is nowhere near them.

Physician from Los Angeles Central Receiving Hospital checks firemen's blood pressure and temperature to determine effect of exposure to heat, gas and smoke of test fire. Respiration was also checked and a blood sample taken. Medical check was made prior to and after exposure *—Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.*

Fire doors and fusible links

An example of the above is the reliance that has been placed upon the parting of fusible links to permit self-closing doors to shut, thus cutting off drafts and isolating a fire as well as checking heat and smoke spread. It has been found that under conditions in which the timely functioning of links can be beneficial, they are too slow acting. By the time heat rises sufficiently at the door to melt the link, fast-rushing gas and smoke may have got past and into a corridor or a stairway counted upon for evacuation.

Nor is this the only new problem; we know now that under some conditions, smoke and heat are worse when portions of a building are closed off than when opened up. Unfortunately, every combination of fire location, speed of kindling, meteorological conditions, drafts, combustion material at the fire's starting point, smoke and heat poses different requirement for solution. Consequently, the closing of certain doors by fusible links might be the best answer under one group of circumstances and a death trap under others.

Link problems compound themselves due to the pressures and vacuums created within a burning structure. For example, when a link melts, pressure in the direction of swing or a vacuum on the side of the swing may prevent a door from closing; or if it closes and the latch doesn't function, the above forces may push or suck the door open.

Roof venting

Rooftop vents have always been considered invaluable in drawing off heat and smoke. This is a process in which the melting of a fusible link permits a trap door to spring open, providing an exit for heat and smoke. Many upsets in past confidence in this system have been encountered.

Indications are that to be effective, vents must be considerably larger than has previously been believed, and those containing less than 60 square feet may prove to be worthless. This means that many schools across the nation are fitted with vents proportioned to the old concept and consequently they have poor protection.

Vent-opening time is more critical than has been realized. In experiments, link-melting temperatures used ranged from 125 to 165 degrees. It often required from 7 to 12 minutes for a 125-degree link to open a vent. Because of this, a slow-kindling fire could produce major quantities of smoke before it would generate enough heat to melt the link and in turn open the vent. By this time, corridors could become clogged with lethal smoke. This means that during the two or three minutes when safe evacuation must be made, vents may be useless.

Stairways and vents

Still more vent difficulties are posed by the design of stairways. If the edges of the steps are parallel vertically so there isn't a stairwell, smoke will weave in and out under the steps instead of rising. During this process, it will layer-in to a dense condition and then spread along corridors instead of continuing up and out through the vent. In many instances, the smoke seemingly violated the laws of gases by spreading laterally through corridors and then descending a stairway at the far end, coming in behind observers and forcing them to evacuate through windows because all other avenues of escape had been cut off.

Obviously, the danger lies in the fact that the second floor became untenable throughout its length before the smoke got to the third floor. If, for example, an alarm is delayed under these conditions, the entire first and second floors may become unusable too swiftly to permit evacuation by means of interior stairways.

Although sprinklers will be considered later, we want to point out that off-setting their many desirable features is the fact that when installed in stairshafts, they may retard or prevent a vent from opening. This is the location where they should open first.

It was frequently observed that

when a vent opened, there was often a lazy drift of smoke to the outside for an appreciable length of time until a chimney effect was generated and the smoke began to draw off in effective volume. Meanwhile, however, the building had become loaded with dangerous volumes of smoke. Even when vents opened in two to four minutes, the corridors became smoke blocked in as little time as three minutes. Despite an efficient pupil-evacuation time of two minutes (after receipt of an alarm that may not have been triggered for a considerable time after the fire started), it is quite likely that before the last youngsters could get outside, some would be caught in smoke sufficiently dense to imperil life.

Although, under favorable circumstances, a vent might clear out smoke at a satisfactory rate, it will seldom draw off extreme heat rapidly enough. In one case, smoke was cleared within 15 minutes, but the temperature in the hall where the fire was started, and in the stairshaft, was still a lethal 600 degrees.

Permanently open vents do not solve either smoke or heat problems because under this condition, more time is required to clear out both. This is due to air turbulence and to the presence in the stairshaft of a "cork" of cold, heavy air. It would be practicable to control vent opening by attaching its release mechanism to a smoke or heat-actuated fire detection and alarm system. Some of these will operate within two and a half minutes under most conditions. But the big problem is that of placing enough sensing elements in enough locations so that no matter how or where a fire starts it will be detected within seconds—not minutes.

There is a final observation on vents which notes that when one opens, there is a huge increase in temperature at the base of the stairway and smoke increases tremendously. This runs headlong into those first two or three critical minutes needed so desperately to get pupils out of a building.

As a result of the new information developed on vents, it is the opinion of test officials that they should be used in single-story buildings and are useless in multistory structures.

Los Angeles fire fighters enter basement to extinguish blaze. The experiments also provided opportunity to test breathing apparatus, protective clothing and fire fighting methods

—Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.

Sprinklers rate high

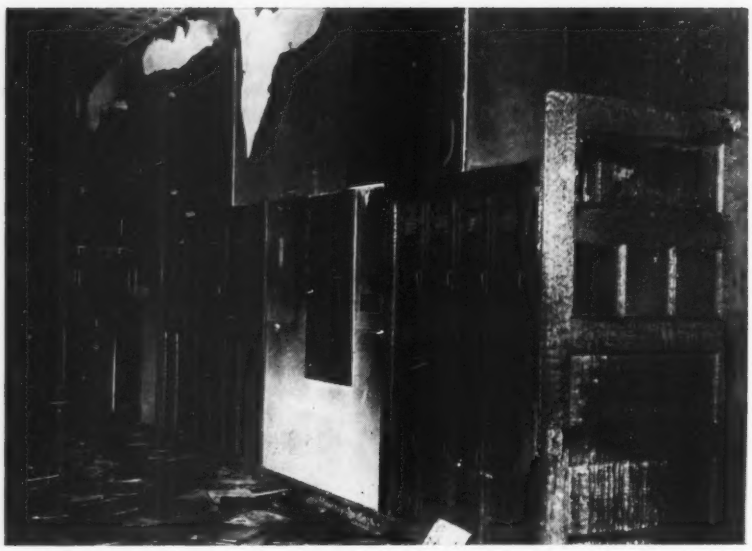
Extensive sprinkler experiments were run, and it is the consensus of fire engineers that they can often mean the difference between disaster and survival; but they have drawbacks and their installation per se is no guarantee of maximum safety. In fact, situations can develop in which one sprinkler can cool another successively and nullify a substantial portion of a system.

Although National Fire Protection Association records do not contain any cases in which water from sprinklers has caused any occupant hazards, sprinklers have never before been subjected to exhaustive tests from the life-safety standpoint to find out whether or not under some circumstances they might prove dangerous. In the Los Angeles experiments, it has been determined that if the heat build-up in a hall is rapid, the actuation of the sprinklers can load it with steam that would kill anyone coming into the area during the critical time. Under some conditions, sprinklers will cause smoke and then heat to layer-down with the latter being driven right to the floor. When this happens, sprinklers cause the generation of intolerable steam. Also, if smoke is medium dense, when combined with steam it becomes dense and no one can live if exposed to this. It has also been noted that in general, sprinklers make fire much smokier.

Detection devices

Almost every kind of fire and smoke detection devices has been tested in the experiments. There are units which are triggered when smoke density reaches a predetermined level, others are heat actuated, some are set off by the first sprinkler head to operate, and a fourth functions when the rate-of-rise of heat reaches a preset amount.

It generally requires about four minutes for an alarm to be actuated under optimum conditions. This can be too late because a fire might smoulder for many minutes or even for hours and not set off an alarm unless its actuator is where the fire starts, or unless a system is used which



Within two minutes after fire was set in classroom (through door at right), supercharged gas broke out glass and panel section at door top. When temperature reached 700 degrees, acoustical tile attached to ceiling with mastic began to ignite without flame contact and to fall to the floor —*Official Los Angeles F. D. photo by Cecil R. Lynch, Jr.*

monitors virtually every square yard of the building.

If the fire is slow in generating, when the flames ultimately cut through the structure and admit a sudden charge of oxygen, the results are explosive. Under these circumstances, if stairwells are enclosed in one-hour, fire-resistive masonry and the fire doors at the head of each hall are kept shut, and if classroom doors are kept closed, safe evacuation is highly probable. However, if stairwells are unenclosed, or if they are enclosed and their doors at landings are propped open for ventilation, disaster is likely.

If fire is detected soon after kindling and if the school has an efficient fire-drill system, most two-story and probably three-story buildings can be cleared out in two to three minutes. This should suffice—but if there is delayed fire detection and if a building is riddled with construction inadequacies or fire-precaution violations, it can mean tragedy. Under some circumstances, the answer may lie wholly, or in part, in installing sprinklers in any location in which there is likely to be a concentration of fleeing pupils.

To give the reader an example of conditions within a blazing structure, we have this incident from one of the test fires which illustrates what can happen to people. Firemen were stationed on the second and third floors of the school while a fire burned in a first-floor classroom. The men were to record the time at which heat and smoke became unbearable. Finally, one man on the second floor couldn't stand the heat any longer, so he and his partner crawled to an exit door. From a prone position, one raised his hand to push the panic bar and open the door. As he did this, a sheaf of note paper in his hand burst into flame. Remember, the fire was on the first floor. A check of recorders showed that the floor-level temperature near the door was approximately 165 degrees, but the waist-high temperature was 550 degrees. Think of this when anyone speaks of evacuating children along long corridors. Also, if children are forced to crawl along the floor to keep out of smoke and heat, evacuation might be impossibly prolonged. In dry heat, and with little or no smoke present, a child could probably withstand as much as 130 to 140 degrees, but under panic conditions with smoke and moist heat present, this amount could be fatal.

Acoustical tile

Despite the fact that we may require fire-retarding plastered walls and ceilings in corridors, we frequently cover these and classroom ceilings with fiber acoustical tile. It has been believed that with this attached to plaster or gypsum board, it would not burn, but the tests have proved otherwise.

Although the tile may have a fire-retardant coating on its exposed side, this appears to deteriorate with time. In addition, the top surface is not so treated and a fire above will ignite it readily. Furthermore, the material has been observed to ignite without flame contact at approximately 700 degrees. Gas temperatures of 1200 to 1600 degrees are not uncommon in building fires.

It has also been learned that when attached to plaster or to any other surface with an adhesive, the material will drop off in a blaze and will also come loose readily when a hose stream hits it. When it falls, it adds fuel to the combustion material on the floor.

In classrooms, it is permissible to attach this tile to wood batts and it is frequent practice to install above it thermal insulation contained in large paper bags. Thus we have a wood roof structure, stuffed with paper and surfaced with a ceiling of highly combustible fiber material.

While new tile may burn no faster than 5 feet per minute when the fire-retardant coating is at top efficiency, the tests have demonstrated that some old material will burn as rapidly as 50 feet per minute. The writer has seen fire shoot across 20 to 30 feet of it in as many seconds, with tongues of flame darting 4 to 5 feet below it.

Critical period

Much of our school-fire problem can be summarized by this cardinal point, of which most laymen are unaware. The statement was made by Fire Marshal Hill who said to the writer that it is futile to expect that fire fighting equipment can reach a major fire in time to make extensive rescues. The first two or three minutes after discovery are of such overwhelming importance, he says, that if evacuation isn't safely made within that time, loss of life is a certainty. If someone is to die in a school fire, Chief Hill continued, he will probably be dead before the first fire truck clears the stationhouse door.

Possible code changes

It will be quite a while before the voluminous technical data amassed in the experiments are translated into safety code revisions. Numerous other states and several foreign governments have followed the work here with the keenest of interest and when the findings are compiled, the changes in school design and materials will not only affect California schools, but also those throughout the country and abroad. Since many of the alterations in safety codes will be retroactive, their provisions are of major importance to every school district in all states for new and old buildings.

Until Captain Najarian and other

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What Can We Do About Christmas Hazards?

By FRANK HANIFIN

Fires claimed 93 lives nationwide in 102 hours of the 1958 Yuletide

WHEN 93 PERSONS died in the Chicago school fire a year ago, the entire nation was aghast. Practically every community in the country re-evaluated the fire safety of its own schools. However, when 93 persons died nationwide in fires between 6 p.m., December 24 and midnight, December 28, 1958, there was hardly a ripple of excitement.

In fact, while these fire deaths reached an unusually high figure, it could have been foretold that there would be many deaths from fire at Christmas. As Ontario Fire Marshal W. J. Scott pointed out last year, Yuletide fire losses follow such a consistent pattern year after year that they can be closely predicted. Beginning with the arrival of the cold weather when heating systems contribute to an uptrend in the occurrence of fires, losses continue to mount with the coming of the festive season. The additional hazards of Christmas trees and flammable decorations in homes and stores give an extra boost to the already high figure on fire loss.

What can be done to eliminate or mitigate these hazards and cut down the losses? That they can be cut is a matter of record. Back in 1947-48, when much of the East was buried under its worst snowfall in many years, starting on December 26, 1947 and continuing into January 1948, New York City was virtually paralyzed. When the 25.8-inch snowfall made roads impassable, motorists abandoned their cars in the middle of streets. In many areas hydrants were buried under snow banks. Aerial fire alarm circuits were badly disrupted by sleet, making inoperative hundreds of signal boxes in the Bronx, Queens, Staten Island and some sections of Brooklyn. The emergency was so acute that on the afternoon of December 26 New York firemen were ordered to work a double shift; shortly before midnight a total recall put a continuous duty system into effect.

Fires reduced 50%

The fire commissioner, Frank J. Quayle, made a radio appeal urging the people to greater care "because the fire engines can't get through." In the eight days between December 26 and January 3, the number of fires in New York City was only half what it had been for the corresponding week the year before! Evidently when New Yorkers realized the danger, they took extra precautions and the number of fires was drastically reduced.

Every year the National Board of Fire Underwriters sends to all fire chiefs material on Christmas hazards suitable for release to local newspapers, radio stations and other media. This material can be used to good advantage to impress upon every member of the community the hazards of the season.

Unfortunately, there are numerous examples to illustrate the dangers. In one instance, a fire which fed upon a Christmas tree, three children ranging in age from 14 months to two years were suffocated in their Wilkes-Barre, Pa., home early last Christmas morning. The blaze spread through the living room, front hallway and stairs of the home, blocking the only exit from the second-floor bedrooms. Thick smoke prevented the parents, a boarder and a guest from rescuing the three children who were in a bedroom directly over the worst of the fire. Firemen brought the children out, and they were rushed to a hospital where they were pronounced dead on arrival. Subfreezing temperature and ice hampered the work of the firemen.

Illustrate the warning

Warning a community about Christmas hazards may not be enough. It might be more effective for the fire chief to pinpoint his warning with an actual incident. He could tell his listeners, for example, how the combination of a combustible Yuletide costume and a forbidden smoke resulted in the death of a teen-ager and a $100,000 store fire in Wilmington, Del., three days before last Christmas. The youth was fatally burned and three others injured in the fire. The young man had been employed by the store to personify "Frosty, the Snow Man," and to distribute souvenirs to customers. His costume consisted of cotton batting, a sheet and a pillowcase, which were sprayed with artificial snow.

Suddenly the youth dashed from near the front of the store down the main aisle with his costume ablaze. The flames from his burning garments quickly ignited decorations, dresses, clothing and other stock. In practically an instant the entire store was ablaze. Sixteen pieces of fire apparatus responded, and the firemen fought the blaze for an hour and a half before bringing it under control. Ten hours

Three infants were asphyxiated last Christmas morning in their Wilkes-Barre home when flames, smoke and gases from a fire which fed upon a Christmas tree, roared up this stairway
—*Chukinas Studio photo*

Churches are not immune to fire as photo of $250,000 blaze in this Gardner, Mass., church shows. Fire Chief James F. Casavant reported that 12 lines, all 2½-inch, were needed to prevent fire spread

after the fire started, firemen were still wetting down and overhauling.

Although there were strict rules against smoking, an investigation by the fire marshal disclosed that the youth's costume ignited as another man was giving him a "light" from a lighter which had just been filled with fluid. The flame ignited the costume.

What New York does

Incidentally, New York City has banned smoking in department stores for several years. Receptacles are placed at the entrances to most department stores with a notice of the ban and an explicit or implied invitation to deposit "butts." Warnings are displayed prominently throughout stores, and the "sneak smoker" is apt to be checked by a store guard or to receive a summons from a fire inspector.

New York also forbids the use of Christmas trees or any decorations made of Christmas tree branches in any building of a public character. This includes hotels, theatres, restaurants, public halls, department stores, and buildings used or intended to be used for public assembly, and buildings where large numbers of persons congregate. Fire Commissioner Edward F. Cavanagh, Jr., points out that repeated tests have shown that Christmas trees cannot be effectively flameproofed. The major difficulty is the inability to remove the pitch from these trees. The law also bans the use of hemlock, balsam, spanish moss and decorative greens which contain pitch. A limited amount of greens is permitted under prescribed conditions. An affidavit must be sent to the division of fire prevention testifying that the greens have been properly flameproofed with a chemical approved by the board of standards and appeals in such manner as to retard the spread of fire. The greens must be removed from the establishment by the following January 2. Fire extinguishers or water buckets, as the fire commissioner may direct, must be provided, and no combustibles are permitted near the decorations.

Ontario Fire Marshal Scott notes that "No one wants to do away with the many age-old and beautiful traditions of Christmas trees and decora-

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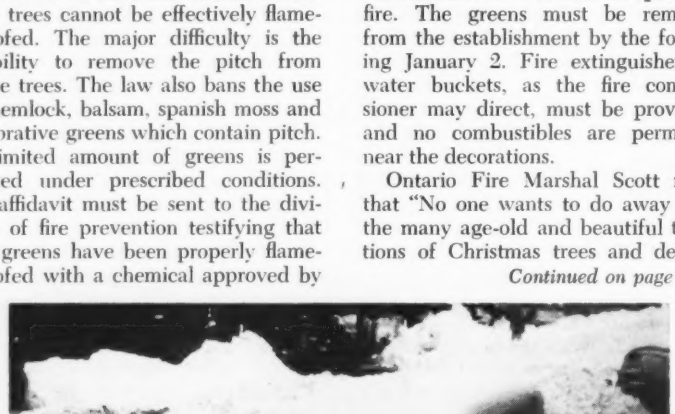

Not a single hydrant can be seen in this view of West 43rd Street, New York City, after heavy snowfall of 1947-48. Conditions were even worse outside of midtown area, aud for a time apparatus could not get through some streets —*photo by Bill Herries*

Oregon Marshal Reports on Roseburg Explosion

OREGON Fire Marshal V. Dean Musser has issued a complete report on the disastrous Roseburg, Ore., explosion of August 7 which killed 13 persons, devastated eight blocks of that city and seriously damaged some 20 more blocks (FIRE ENGINEERING, October 1959, page 930).

Based upon the findings of Eldon Winkley, chief deputy marshal and W. P. Roble, deputy marshal, Marshal Musser made the following recommendations:

1. That all liquefied petroleum gas bulk storage and/or utility plants install an overhead water sprinkler system for advancing heat dissipation in event of fire at or near the storage site. This type of installation would be particularly effective in areas having limited fire fighting ability.

2. That firemen "turnout" clothing be given a thorough study by the fire service with the view in mind of changing the traditional black color to a white or comparable shade or improving the heat-resistance qualities of the garment to minimize body, arm or leg burns to the wearer.

3. Thorough understanding of rules, regulations and laws by all concerned with the handling and transporting of dangerous materials and the rigid enforcement of such regulatory measures.

4. That suggested amendments given during the ICC Roseburg hearing be seriously considered by the commission for adoption.

5. Should fire break out in an area where fertilizer-grade ammonium nitrate is stored, it is important that the mass be kept cool and that the burning be extinguished promptly. Large volumes of water should therefore be applied as quickly as possible; this is the primary recommendation based on expert experience.

It is important that the following special instructions relative to fertilizer-grade ammonium nitrate be studied by the general fire service as good practice procedure:

a. Apply water immediately in as much volume as possible, preferably by using fire hose of 1½-inch to 2½-inch diameter. Bring as many hose lines to bear as the capacity and pressure of the water supply system will permit.

b. Do not hesitate to apply water directly to the containers of the ammonium nitrate fertilizer, inasmuch as instantaneous cooling is the desired objective.

c. Water deluge systems have been effective in extinguishing fires in ammonium nitrate fertilizer. The adequacy of water sprinkler or spray systems of water fog on fires involving ammonium nitrate fertilizer is doubtful. Chemical extinguishers of the carbon tetrachloride, gas or foam type are useless for this type of fire and should not be used.

d. Since ammonium nitrate fertilizer is an oxidizing material capable of supplying oxygen sufficient to maintain combustion, efforts to smother the fire with steam will be useless and dangerous, as the use of steam will increase the temperature of the mass and thus increase the hazard.

e. Irrespective of the normal reaction of ventilation increasing the severity of a fire, it is recommended that barriers such as doors and windows be opened to provide as much ventilation as possible. Dissipation of gases of decomposition will reduce the possibility of pressure being built up and enhance the effectiveness of fire fighting operations. It should be remembered that high temperature and pressure are factors to be avoided.

f. Vapors from burning ammonium nitrate fertilizer are extremely toxic. In this respect, the decomposition products of fertilizer-grade ammonium nitrate do not differ from those of other nitrates. Oxygen-breathing apparatus or hose-connected fresh-air breathing apparatus of types approved by the United States Bureau of Mines should be used to protect personnel against gases. Oxides of nitrogen and carbon monoxide are the most dangerous of the gases likely to be encountered in such a fire.

g. If sufficient heat is present, it may happen that during the application of water, formation of steam in pockets in the piles of nitrates may cause eruptions with force comparable to minor explosions. For this reason it is judicious not to approach too close to the fire and not to become too alarmed at such steam eruptions. The fire fighter should protect himself by guiding the water from behind the shelter of the wall of the warehouse, at the corner of doorways, immediately below the sash of the windows or from behind any substantial barrier. The foregoing is not to be interpreted as superseding "on the spot" judgment. The quicker the temperature is lowered, the less likelihood there will be of steam eruptions and the generation of oxides of nitrogen. Rapid reduction of temperature is the essence of the entire control of operation.

h. Clean-up operations. After extinction of the fire, the damaged fertilizer should be removed and disposed of. Unsalvageable material may be disposed of by burying in the ground or dumping in water. When all fertilizer has been removed, the warehouse should be hosed and scrubbed with water, and all residual fertilizer washed away. It is advisable that metals in contact with the residues of ammonium nitrate fertilizer be thoroughly cleaned with water to prevent corrosion. Wooden floors impregnated with ammonium nitrate fertilizer will be extremely free burning if a source of ignition should contact them. For this reason, flushing and scrubbing of such areas should be very thorough to insure that the dissolving of all ammonium nitrate fertilizer has been acomplished. Wet empty bags which formerly contained ammonium nitrate fertilizer should be removed to a safe

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Fig. 1. Interior of New York garage after fire snuffed out four lives and caused $200,000 damage

How Effective is Fire-Retardant Paint?

By EDWARD W. DWYER*

MORE THAN TEN YEARS of field experience with fire-retardant paint has proved its vital part in minimizing loss of life and property by fire. The wisdom of applying retardant paint in both new construction and as standard maintenance practice is becoming widely recognized for homes, hospitals, schools, industrial plants, and for smaller buildings such as dry-cleaning firms, paint stores and lumber retailers.

A fire which recently occurred in a New York garage under similar conditions—but far from similar results—as a fire that took place over two years ago in a Chicago garage underscores in actual experience the vital part that fire-retardant paint can play in fire protection.

Similar—and tragically different

Both fires occurred in garages with wooden roofs. Both fires began with the ignition of gasoline vapors. In both cases, the garage space enclosing the fire had almost exactly the same area—80 feet long by 50 feet wide in New York, 79 feet long by 60 feet wide in Chicago.

The tragic difference, however, was the loss of four lives in the New York fire, and no injury to employees in Chicago. Estimated property loss in New York was $200,000; the total loss in Chicago was less than $20,000. The New York garage was knocked out completely; the Chicago garage was back in action before its service was missed.

Fig. 2. Destruction of garage interior and trucks. Note how aluminum trailer melted

* Fire Protection Consultant, Albi Manufacturing Company, Inc.

Fig. 3. Roof is burned out in New York garage

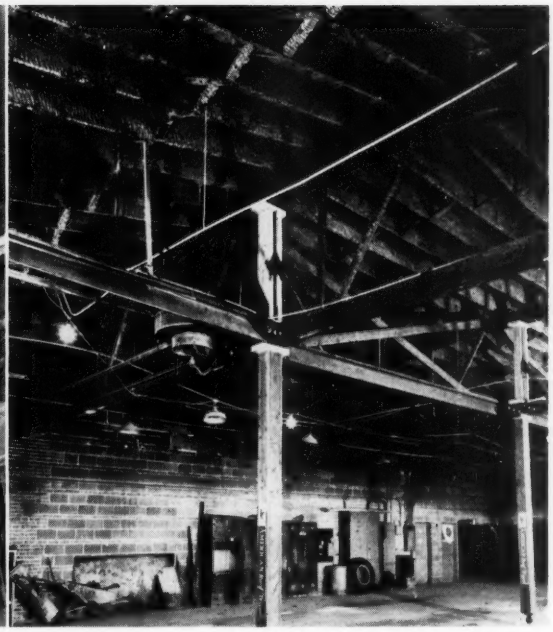

Fig. 5. Roof of Chicago garage did not burn through

The one essential structural difference between the two garages was that the wood truss members and roof sheathing in the Chicago garage were coated with a fire-retardant paint; the joist roof structure in New York was not protected. The value of the fire retardant paints both to the fire departments in action and the degree of fire loss is best described in terms of what actually happened in the New York and Chicago garages.

The New York garage fire

The New York garage fire occurred at 6:15 p.m. on April 15, 1959, at 516 West 27th Street. The 16-foot-high wooden joist roof (Fig. 1) viewed from near the garage's front door, was ignited almost immediately by heat from flames which developed near a gasoline pump in the front. The fire then spread rapidly along the roof from the front at top center down to the platform and office area in the rear. Four men were trapped and killed by the flames in this rear platform area. As is evident (Figs. 2 and 3), four trailer trucks were virtually destroyed, as was their cargo.

Significant facts in this case are that an alarm was turned in within a minute and that the fire department was actively engaged in three-alarm action within another five minutes (the first companies on the scene were stationed only seven blocks away). After immediate application of six hose streams, the fire was under sufficient control for entry, so that the firemen proceeded to the rear platform, where the bodies were found. The speed and efficiency of the fire department were clearly indicated by the fact that none of the bodies was badly burned.

Fig. 4. Exterior of Chicago garage and viaduct were not damaged

The rapidity of the spread of fire along the roof, however, is indicated by the extensive disintegration of the aluminum truck bodies and by the fact, as reported by the chief in charge, no human cries were heard less than four minutes from the start of the fire. Note (Fig. 2) that the top of the trailer near the roof has melted entirely off. The damage is even more severe (Fig. 3) where the aluminum trailer sides have also melted down.

The starting point of the fire is evident where the roof is most severely charred in the upper right (Fig. 1). Since wood ignites at the relatively low temperatures of about 450°F, it was not necessary for the flame to come into actual contact with the roof in order to start burning and spreading the fire. In this case, the amount of gasoline involved was small but enough to raise the surface of the roof immediately to its ignition temperature before the gasoline spill had burned out.

Note (Fig. 1) that the garage floor dips down (water has collected) to the center of the garage. The floor near the front should have been sloped outward so that the gasoline vapors (triple the weight of air) or gasoline spill could flow out of the area, rather than farther into the garage.

The Chicago fire

The Chicago fire occurred on March 5, 1957, at the Consumers Garage Building (Fig. 4) located under the viaduct at Grand and Central Av-

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Struggle to extinguish unusual fire extended over 20-hour period. In left foreground, Director Sestric (hatless) confers with police officers concerning the use of weapons to vent tank —*Globe-Democrat photo by Paul Hodges*

Fighting Fire with Firearms

St. Louis, Mo., gas "scrubber" poses difficult extinguishing problem. Police marksmen lend a helping hand

By JOSEPH P. SESTRIC *Director of Public Safety* **and ROBERT OLSEN, JR.** *Acting Fire Chief*

SHOOTING HOLES in a tank to assist in controlling a fire involving the cylinder has occurred more in early 20th Century fire service fiction than in practice, and the technique is generally frowned on in most fire circles. A recent St. Louis, Mo., fire in a manufactured gas plant "scrubber" or filter tank created a hazardous problem which was finally solved by the use of this unorthodox method.

On September 4, workmen were in the process of dismantling the tall tank employing cutting torches. It is believed hot slag or heat conduction from the metal walls set fire to wooden rods, called hurdles, which were located at 2-foot intervals in the entire tank. The job foreman attempted to fight the ensuing blaze without assistance. After spending some time in a futile attempt to extinguish the flames, he finally decided to call the fire department. The first alarm was reported as an "open rubbish fire" at 4:01 p.m.

The scrubber or filter tank of the Laclede Gas Company at 151 Rutger Street was 93 feet high overall and measured 15 feet in diameter. It was bolted to an octagonal concrete base 18 inches high and securely anchored to the ground in depth.

The shell of the tank was steel throughout. The base sections were 1 inch thick to the top with a 6-inch lap above rivets. The tank had no vents at the top and the pressure relief at the base was a leveling device to emit oil in the event of excessive operational pressure. Due to the dismantling, this was inoperative. The tank was equipped with a number of pipes of various sizes for pumping oil into the tank and removing treated and untreated gas to an adjacent holder. There was a steel ladder on the outside of the tank and a catwalk atop the tank. Approximately 50 feet above the base at intervals, 1¾-inch pipe, flanged both sides, was bolted to the tank for steam cleaning. At several widely separated points, there were oval shaped inserts or recesses, apparently for cleanouts although their purpose could not be definitely ascertained. The cover on top of the tank was tightly secured by 22 bolted nuts. Six pipe openings had been made in one side of the cover for the injection of oil under pressure and its subsequent atomization. The couplings to these pipes had been removed.

Tank construction

There were many wooden hurdles inside the tank. Small wooden blocks, ¾ inch thick and 2 inches square with a hole in the center were inserted on these wooden rods and served as separators for vanes ⅜ inch thick, approximately 6 inches long and 4 inches wide. The hurdles were placed at 2-foot intervals at such angles that gas could not follow a direct path, but was forced to circulate through the grid, or pattern thus formed, as a part of the scrubbing process. Globules of the atomized oil would cling to hurdles and as gas passed through the maze, certain impurities were removed and recovered as useful by-products.

The installation was known as Station A and placed in operation in 1890. The filtering tank was added during World War I, to aid in the processing of the gas as well as to collect coal tar by-products, one of which was benzol used in the manufacture of certain explosives.

During the time before the arrival of the first company, the heat inside the unvented tank grew in intensity and the problem became more acute upon arrival. Ladder men were or-

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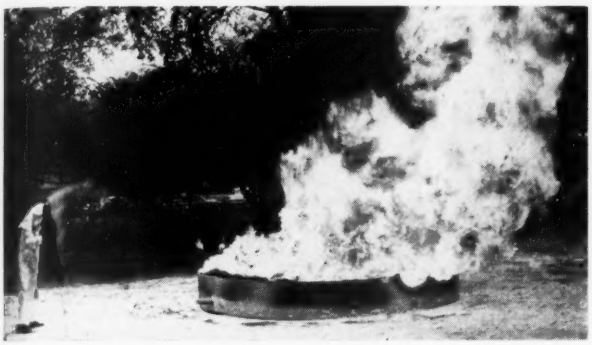
Firemen's clothing of aluminized fabric has revolutionized fire fighting techniques by enabling the men to work close to flame a—vital factor in extinguishing fire in early stages



A member of the St. Paul, Minn., Fire Department holds a smoldering fireman's rubber coat which absorbs 90 per cent of the intense radiant heat generated by this blaze. Dressed in a protective coat, trousers and hood of aluminized fabric, this man is shielded from 90 per cent of the heat —*St. Paul F. D. photo*

Correct Use of ALUMINIZED PROTECTIVE CLOTHING

Multiplies Effectiveness of Fire Fighting

By JOHN L. CURTIN*

TESTED, approved and now in regular use by the armed forces, fire departments and industry, heat-reflective clothing made of aluminized fabric has become essential equipment in protection from exposure to radiant heat. This fabric, a revolutionary development of modern research, has come a long way since its public debut in Long Island City three years ago. On that day a man walked into an oven one-eighth as hot as the sun and walked out unharmed after two minutes.

During those two minutes, 1,200-degree temperatures burned an armload of wood, consumed the wicker chair he sat in, and broiled a steak which he held. D. J. Bennett, the ceramic engineer who entered that oven, demonstrated what aluminized fabric made possible for the first time. Specific applications of such protective clothing were immediately evident to fire fighters and industrial users; in the past three years aluminized fabric has been employed in myriad ways wherever radiant heat once presented a problem.

This rapid acceptance led in turn to the development of different types of aluminized fabric, each one tailored to meet specific requirements. Through the years, the special dangers of fire fighting led to development of highly specialized protective clothing. One of the earliest was a helmet to ward off debris. Later came smoke masks, tough rubber coats and boots.

Techniques were perfected to augment this added protection. The dangers of darkness were overcome with lights and reflective sheeting applied to firemen's clothing. Shields of metal or of water spray were employed to protect fire fighters. Within the limits of this added protection, firemen functioned more effectively. Beyond these limits, they were burned and injured. The tough fireman's coat of rubber offered protection but still absorbed more than 90 per cent of all radiant heat.

"Scotch-Shield" aluminized fabric reflects more than 90 per cent of all radiant heat; it is this quality which has revolutionized fire fighting techniques by enabling firemen to work "close in." Like all new tools of the firemen's profession, the right one must be selected for each specific job and used properly. If protective clothing of aluminized fabric is misused, the objective may not be accomplished, the equipment may be damaged and men may be injured. There are three recognized categories of situations in fire fighting during which different degrees of heat are encountered: Approach, proximity and fire-entry.

"Approach" clothing

For "approach," Type 82 is recommended. Its 1-ounce flameproof rayon cloth backing provides extreme flexibility and a high stress and tear strengh. Tear strength is 26 pounds. This type is the least expensive aluminized fabric. Lightweight clothing made of Type 82 allows fire fighters to move in on a fire in those precious early minutes. From this close posi-

Continued on page 1081

* Manager, Research and Development, Heat-Reflective Fabrics, Minnesota Mining and Manufacturing Co.

Handling a Group Insurance Plan

Card file system provides excellent control with a minimum of clerical help

By GEORGE B. NOLAN, *Secretary*
Widows' and Orphans' Aid Assn., Inc.
San Francisco Fire Department

Fire Chief William Murray checks information in Kardex file which houses association records. Equipment and system is said to have paid for itself in clerical savings

THE SAN FRANCISCO Widows' and Orphans' Aid Association was founded for the purpose of providing a dependable and sufficient amount of security to fire department families in the event of a member's death. This is not charity, but an insurance plan to which the firemen contribute monthly.

A key factor in any insurance-security program is maintaining careful control. Under a new system recently installed, the fire department now not only has such control in the association, but has also achieved savings in time, effort and money.

It became clear three or four years ago that some kind of new system was imperative. The association had been founded in 1903, and was using the same method of collecting contributions and making payments to beneficiaries that it had started with. Since that time—and especially in the past decade or so—the fire department, and therefore, this department's work, has grown tremendously.

Records of payments, beneficiaries, etc., used to be kept on hand-posted cards in a regular alphabetical file. For one thing, the cards provide no visible reference data. There was no way to tell at a glance whether a member was paid up.

Moreover, these cards, housed in a wooden box, were simply the first step. They showed the member's name and a number. With this as a guide, we had to look in a small reference book which, in turn, directed us to one of several other books which contained the needed information.

This three-step process was awkward to begin with, but as the organization grew, it became a problem. We now have a total of about 1,750 members, of whom 1,300 are active and 450 are retired. By converting to two Safe-Kardex cabinets with a one-card system of record keeping, we now have visible accurate control in one compact location.

Everything pertaining to a member is put on one card — transcript of dues, name, address, age, when the person joined the department, whether he was expelled, suspended, reinstated, died, when the beneficiary was paid, etc. In the Kardex pocket we have a card which names the beneficiary and is signed and witnessed.

Through the use of signals in the visible edge of each pocket we can tell immediately which members are paid up to the proper month, and which are delinquent. Movable Graph-A-Matic signals call attention to unusual circumstances, again at a glance.

One of the two cabinets is the active file, housing records on all members still living, both active and retired. We adopted a "negative" system of posting for the active members which has cut the work by 75 per cent. We assume that the active members have paid, since they do so via a payroll-deduction plan. In a sense, then, the posting of dues payment for the 1,300 active members becomes automatic.

Secretary George B. Nolan checks member records. Equipment permits fast reference to all member data; signals in visible edges at the bottom of each pocket highlight special information

This is not the case, however, with retired members. They must actually make the payment themselves every month, every quarter, or annually—whichever they choose. Since there are only 450 of them, this is the maximum number we have to keep track of each month—a simple matter because of the visual signals which tell us at a glance who is paid up and who is not.

Another problem which might seem to complicate record-keeping is the fact that members can choose one of three policies —$1,000, $2,000 or $3,000 face value. Yet this was easily handled by having a different color for each type—brown, red and blue, respectively.

When a member dies, the card which contains his entire record is moved to the beneficiary file, the second cabinet. We add only one thing to it: A copy of the death certificate, which is placed in the back of the pocket.

The clerical savings brought about by this system have been striking. This is especially true since—July 1, 1958, when the Widows' and Orphans' Aid Association merged with the fire deparement's Mutual Aid Association. Before the merger of the two organizations, which had similar and parallel goals, we had to use two people to keep the records straight. Since then, under the new system, the whole operation is handled by just one person.

Although our office and files are located in the basement of the San Francisco City Hall, a so-called fireproof building, we felt that insulated cabinets were advisable. These are our only records, and we must be certain they will not be destroyed in case of fire. The cabinets provide protection right at the point of use, 24 hours a day. □□

Let's talk frankly about mildew

Fire hose manufacturers have various "treatments" which they apply to their hose to render it mildew resistant.

So does Eureka . . . and we believe that ours is second to none!

BUT our more than 80 years' experience in the manufacture of the highest-quality municipal fire hose has convinced us that the *only sure way to prevent mildew* in fire hose is to *dry it thoroughly* every time it gets wet. Don't overlook even a light shower or stray spray at a fire which may dampen the unused hose in the truck bed.

It is just as important to keep hose *dry* as it is to keep it *clean*. "Treatment" doesn't take the place of good care in prolonging hose life. At best, it provides mildew *resistance*, not prevention! Such treatment may not *wash out*, but normal abrasion might *wear through* it. So play safe! KEEP YOUR HOSE DRY!

We sincerely hope that this frank word of caution will substitute for costly experience in many fire departments . . . particularly in financially-pressed volunteer companies! Naturally we'll be happy to hear from you if you have anything to add on this subject.

Note how criss-crossing vertical cords tie all plies into a single jacket.

"For greater protection to life and property"

EUREKA FIRE HOSE

EUR EKA

Since 1875, Specialists in Manufacturing Circular-Woven Rubber-Lined Fire Hose

1 Market Street • Passaic, New Jersey

Division of **United States Rubber**

WHAT'S NEW

Among the Manufacturers

- products
- processes
- personalities

Aluminized Overglove

Fyrepel Products, Inc., Box 503, Newark, Ohio, is marketing the "Fyrepel A1-7 Overglove." This is an oversized aluminum-coated neoprene-backed finger glove said to provide protection against radiant heat. It has a fleece inner lining and is claimed to be large enough for wear over a regulation wool glove.

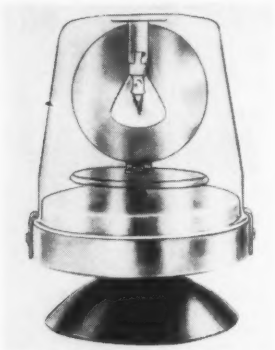
New S & S Styling

The 1959 line of S & S ambulances built by Hess and Eisenhardt Co., 8939 Blue Ash Road, Cincinnati 42, Ohio, features a "V" rear door. The unique styling adds about 10 inches of inside floor space and is said to facilitate loading and unloading of the vehicle.

Floating Suction Strainer

Megator Pumps & Compressors, Inc., 930 Manchester Avenue, Pittsburgh 12, Pa., have developed a floating suction strainer, the "Dolphin," which is claimed to permit drawing water from just below the surface of a pond or stream so as to avoid drawing either sand or silt from the bottom, or floating matter from the surface. It is said that experience to date has indicated the Dolphin strainer prevents the formation of vortexes, and the tendency of air to be entrained into the pump suction. It is made in 1½-inch, 2-inch, 3-inch and 4-inch sizes.

New Revolving Light



Trippe Manufacturing Company, 133 North Jefferson Street, Chicago 6, Ill., is marketing "Magna-Vac," a detachable emergency warning light. The unit may be placed on the roof, fender or window deck of a vehicle and it is said a combination of magnetic and vacuum action will hold it securely. An electric motor drives a parabolic mirror which flashes 60 times a minute.

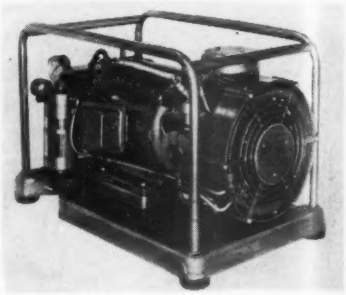
Penetone Markets Slix

The Penetone Co., Tenafly, N. J., is marketing "Slix," a hydrate emulsion formula which it is claimed can control fire hazards of gasoline and other oil spills on land or water. When used as an anti-coalescing agent, it is said the chemical shatters the oil film into coated globules and isolates the droplets with an area of noncombustible water of hydration. The emulsion is then flushed away.

Ward LaFrance to Lease Apparatus

A nationwide marketing plan aimed at the motor vehicle equipment needs of all United States municipalities has been announced by Ryder System, Inc., Miami, Fla., and Ward LaFrance Truck Corporation, Elmira, N. Y. Cities will be able to lease Ward LaFrance equipment through Ryder Leasing, Inc., a subsidiary of the Florida company. Equipment available includes fire apparatus and airport crash trucks, as well as other types of municipal vehicles.

New Cornelius Compressor

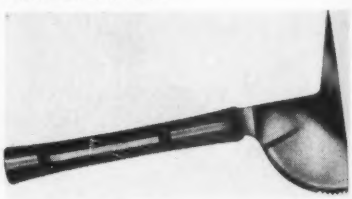


The Cornelius Co., 557-39th Avenue, N. E., Minneapolis 21, Minn., has announced the 380 Series of demand-type breathing equipment high-pressure compressors. It is claimed that the units will deliver 4 cubic feet per minute of free air at up to 3,000 psi and charge a standard 38-cubic-foot tank in less than 10 minutes.

New First Aid Kit

The addition of a C-Thru window in the cover of the new first aid kit supplied by the Davis Emergency Equipment Company, 45 Halleck Street, Newark, N. J., permits rapid inventory of first aid supplies. The new kits are designed for hanging on the wall and can be quickly removed for carrying to the required area.

New Crash Axe



Atlas Safety Equipment Company, Inc., 179 North 10th Street, Brooklyn 11, N. Y., manufacturers of life nets and safety belts, announces the availability of a serrated crash axe. Said to be made in accordance with U. S. Government specifications, the one-piece, drop-forged-steel axe is claimed to be rubber-insulated for 20,000 volts. The emergency tool weighs less than 2½ pounds, is 15 inches long, and is available with a leather sheath for wear with trouser belt.

Continued on page 1064

NEW IMPERIAL® AXIAL PLAYPIPE

Imperial tip delivers full gallonage at any setting.

Style 730 2½" Axial Playpipe with Imperial Tip

Spring steel handles deeply embedded in rubber.

Swiveling base, controls always on top. No kink in hose.

See New Akron Brass Catalog 60—Page 26

Compact. Perfectly balanced, shut-off in the center, not on top. 15⅜" long.

Full swiveling base keeps hose straight. Controls are always on top where they're easy to see and handle.

Spring steel handles, deeply embedded in rubber, anchored securely to playpipe body. Cannot pull off. Added safety. Comfortable grip.

Tip adjusts easily under any pressure. Imperial tip gives same gallonage from straight stream to wide angle fog.

Lightweight! 14¾ lbs.

2 Nozzles in 1

If you want to go forward with 1½" line, shut off, take off tip, add 1½" line to playpipe. Quarter-turn baffle tip and presto — your 2½" nozzle becomes a 1½" nozzle.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO
AKRON MFG. (CANADA), LTD.
AYLMER, ONTARIO

FALSE ALARMS

Deputy Chief: "Captain Rulebook has reported that you were very sarcastic with him today."

Errant Private: "I'm sorry, Chief, I didn't intend to be. But when he shook his finger under my nose and lectured me like my wife does, I forgot myself and kept saying, 'Yes, dear.'"

The druggist met his old friend and customer on the street. "Hi, there, Jack," he said. "Did that mud pack I sold you improve your wife's appearance any?"

"Well, Doc, it did for the first few days, but then it started to wear off."

The bookkeeper asked his boss for a raise on the grounds that three other companies were after him.

"What companies?" the boss asked.

"Water, light and telephone," was the reply.

Judge: "Young lady, is the defendant the man who stole the $100 you had pinned inside your brassiere?"

Indignant Complainant: "Yes, your honor, that's him all right. And he's just as thievin' as he is handsome."

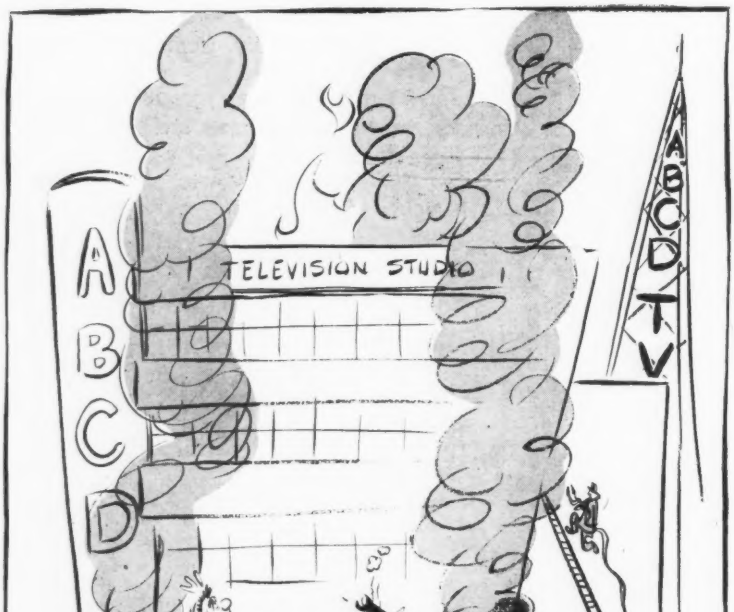
Judge: "Why didn't you put up a fight —scream, kick and scratch him?"

Chargrined plaintiff: "Why, I most certainly would have, your honor, but I didn't know at the time that he was after my money!"

"Say," said the proud purchaser of a sports car to the salesman, "I don't have a garage yet, would you mind leaving it right in the box?"

Instructor: "I will not begin today's lecture until the room settles down."

Voice from the rear: "Go home and sleep it off."



"I never did trust that soda-on-the-grease-fire bit!"

Hardrock: "It says here that no husband will ever cease to make his wife happy if he hands her his uncashed paycheck in a bouquet of flowers."

Kinkchaser: "Little does that author know my wife. She would insist on knowing where I got money to buy the flowers!"

A golf story of the year appeared on the sports page of a newspaper recently. It read: "At this point the gallery deserted the defending champion to watch Miss Smith, whose shorts were dropping on the green with astonishing regularity."

A wealthy, 60-year-old man was contemplating marriage. "Do you think it would be better if I told her I was only 50?" he asked a friend.

"I think," the other advised, "that your chances would be better if you told her you were 75."

Everybody Is One

If you're feeling neurotic
Or slightly psychotic
And can't stand a
Head shrinker's fee,
You can get a prognosis
About your psychosis
From a neighbor who'll
Do it for free.

Naive Nan: "I hear that fireman boyfriend of yours is very talented on the athletic field."

Wiser Winnie: "Yes, he really is. We park there every night."

"Dad, I've got my first part in a play," said the budding young actor. "I play the part of a man who has been married for 20 years."

"Well, son, that's a start," replied the father. "Keep trying and one of these days you'll get a speaking part."

A Texas lad rushed home from kindergarten and demanded that his mother buy him a set of pistols, holsters and gun belt.

"Why, whatever for, dear?" his mother asked. "You surely don't need them for school?"

"Yes, I do. Teacher said that tomorrow she was going to teach us to draw."

The girl I left behind me
I think of night and day.
If ever she should find me,
There would be hell to pay.

The number of blasts that will come from auto horns in a traffic jam is equal to the sum of the squares at the wheel.

FIRE ALARM!

AT THE FIRST HOT BREATH OF FIRE

KIDDE'S ATMO ALARM SYSTEM

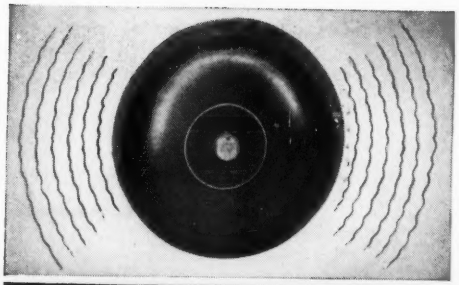
(using rate-of-temperature-rise tubing)

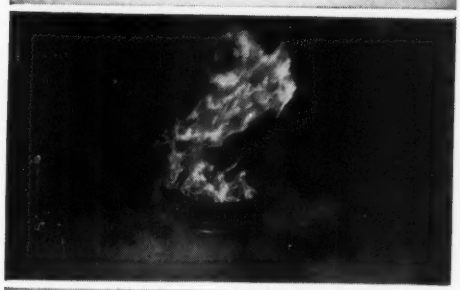
TRIGGERS ALARM AT FIRE AREA

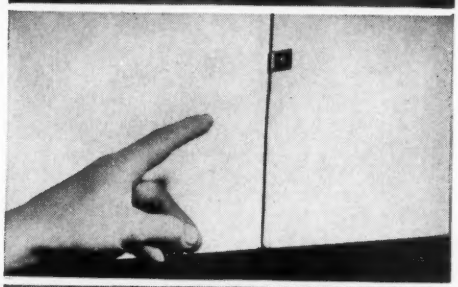
(outside building or at local fire department)

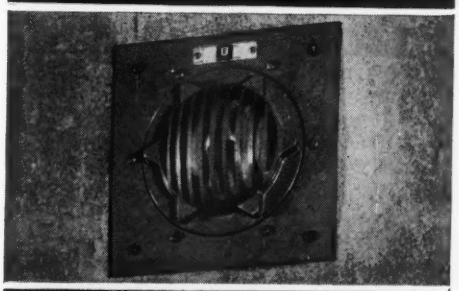
GIVES FIRE LOCATION AT ANNUNCIATOR PANEL

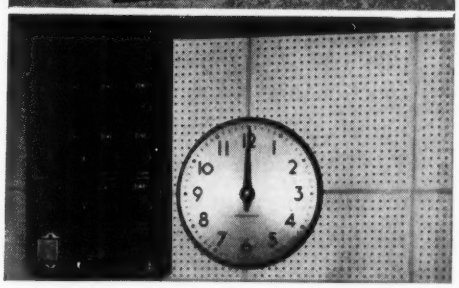
(usually at manned telephone switchboard)











Save priceless lives, save valuable buildings with Kidde's Atmo Fire Alarm System. This wide-area automatic fire detecting and warning system sounds alarm almost the moment fire starts. Ideal where life protection and early fire warning is essential, the Kidde Atmo system operates independently of regular power sources, gives protection even if outside power fails. What's more, the system can close doors, shut off fans, motors, blowers. Is automatically self-resetting after use or test. Write today for Kidde's Atmo Alarm System booklet.

Kidde—Atmo

FIRE DETECTION

KIDDE ULTRASONIC & DETECTION ALARMS, INC.

1133 BRIGHTON RD., CLIFTON, NEW JERSEY

A Subsidiary of

Walter Kidde & Company, Inc.

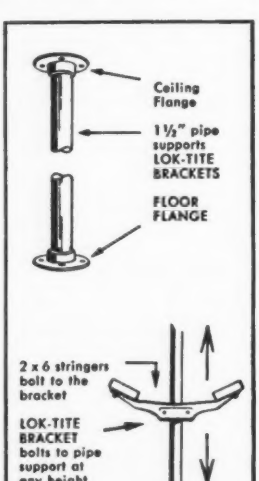
Belleville, N. J.

Hose BRACKETS
for Custom Made Racks

$3.65 F.O.B. WICHITA

Convert Waste Space To Valuable Storage!

Lok-Tite fire hose brackets provide storage racks in odd dimension areas where ready-made storage will not fit. Encourage good housekeeping practices . . . assure easy hose inspection and correct ventilation by building sturdy storage with Lok-Tite brackets approved by hose manufacturers and fire departments everywhere.


Ceiling Flange
1½" pipe supports LOK-TITE BRACKETS
FLOOR FLANGE
2 x 6 stringers bolt to the bracket
LOK-TITE BRACKET bolts to pipe support at any height

W-B MANUFACTURING COMPANY
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Please send me ____ brackets @ $3.65.
NAME_____
STREET_____
CITY_____STATE_____

- Simple to install
- Easy to adjust
- Big load support

Among the Buffs

By Paul C. Ditzel

BUFF Arthur S. Hall of the Box 4 Associates, Worcester, Mass., reports on an activity of that organization which other fire fan clubs might follow. The club is playing a major role in converting Worcester's oldest fire house into a museum.

The 123-year-old fire station at 21 Exchange Street has long been retired from active service and for years seemed to be eventually destined for the wrecker's derrick. For slightly more than a year the Box 4 Associates had been using the building as a meeting place. Prior to being taken over by the buffs, the building had been allowed to fall into disuse and only housed an old hand fire tub. Not long ago, the Box 4 Associates voted to turn the station into a fire museum.

Philip B. Hensen, chairman of a committee which studied the possibility of converting the fire barn, said the club hopes to open the building as a museum by the time this sees print. Buff Hensen said the main purpose of the program is to restore and maintain one of the oldest buildings in the center of the city. He points out that the firehouse is one of the few landmarks from the early days of Worcester. Construction of expressways, redevelopment and other face-lifting projects in recent years have eliminated many of these historical sites from the Worcester map.

The first floor of the three-story building will house two pieces of antique fire apparatus. The rigs will be restored to their original condition by the Box 4 Associates. The second floor will feature a display of small items of fire paraphernalia used in Worcester during the early 1800's. The third floor will continue to be used as a meeting place for the buffs.

Preliminary work of the buffs club included the remodeling of the interior of the building. A major cost of the renovation program will be the installation of a heating plant, the buffs said.

The buffs believe the old fire station was erected about 1835 on land given to the city by a Worcester real estate man, Harrison Bliss, and two nonresidents. A provision in the deed stipulated that the station would remain in the hands of the city fathers only as long as it housed a piece of fire apparatus.

From about 1835, when the Worcester Fire Department was organized, until 1885, the old building was an active fire station. When the firehouse was placed on inactive status, it was turned over to the Worcester Veteran Firemen's Association. They used it for meetings.

The association, made up of regular, retired, and call fire fighters, was organized in 1890 to promote social activities of the Worcester Fire Department. The group bought the 1872 hand fire tub still housed in the building from the Quincy Fire Department to replace apparatus withdrawn from the city. The tub was christened the General Putnam and was used for competition in many firemen's musters throughout the state. As death

claimed association members, they were not replaced and by 1950 the last member of the "old school" had died.

The station stood neglected and unused for years. In 1945 historical records and relics of the Worcester Fire Department were found strewn about all sections of the building. In 1955 Fire Chief Travers turned the building over to the Box 4 Associates and it has been gradually restored as a monument to other days, says Associates President Hall.

Editor Don O'Brien reports that the "321 Associates" buffs performed yeoman service during the IAFC Conference in Grand Rapids. They assisted the Hospitality Committee by providing cars and drivers for "visiting firemen" who needed a ride.

Also among the buffs, Southworth Lancaster of the Cambridge, Mass., Auxiliary Fire Department has been chosen honorary life member of the South African Fire Services Institute. Notice of his election, "in appreciation of loyal and devoted service to the fire profession," has been received from R. A. Matthyser, the Institute's honorary secretary.

Buff Lancaster is a captain in the Auxiliary Fire Service and for the past few years has edited the auxiliary's magazine, *The Register*. In 1958 he was named honorary delegate by the Scandinavian Firefighter's Study Conference, Copenhagen, Denmark.

Until the bells go down again next month, please continue to send your club reports and notices of club activities to me at Box 8731, Crenshaw Station, Los Angeles 8, Calif. □□

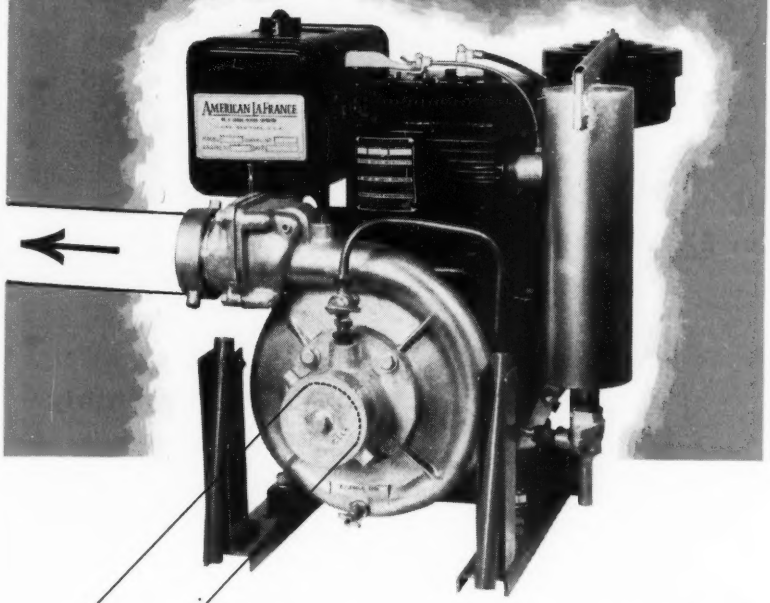
What's Burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from September 22nd to October 19th.

Sitka, Alaska—Sitka Hotel destroyed. Cigarette.
Batesville, Ark.—Guthrie Produce Co. building destroyed.
Hamburg, Ark.—Bank building, housing eight businesses, destroyed.
Little Rock, Ark.—Helm's Bakery destroyed; grocery-confectionery of James O. Hale damaged.
Los Angeles, Calif.—Dwelling of contractor Guy F. Atkinson in foothills of Angeles National Forest, destroyed. Cabanas and outbuildings reported ablaze and many other dwellings threatened in Altadena and LaCanada areas.
Los Angeles, Calif.—Egg division warehouse of Jersey Maid Milk Products Co. destroyed.
Merced, Calif.—American Partition Co. cardboard plant destroyed. Gasoline flareup.
Oakland, Calif.—Dwelling of Ivan Sperbeck destroyed. Careless smoking.
Oakland, Calif.—Globe Plumbing Supply Co. damaged. Exploding gasoline.
San Francisco, Calif.—B. Bacigalupi macaroni factory destroyed. Overheated motor.
San Francisco, Calif.—Warehouse of John Demartini Co. extensively damaged.
San Francisco, Calif.—Western Paper Stock Co. damaged.
Danbury, Conn.—Main barn and adjoining dairy processing building on Tarryville Farm destroyed.
Mansfield, Conn.—Dairy barn on Maple View Farm destroyed.

A Full-Duty, Portable Fire Pump in a 130 Pound package

NEW AMERICAN LAFRANCE MODEL DC PUMP



Take it anywhere – in city streets or field and forest. Use it alone or as a relay. Attach a Foam Nozzle and pick-up tube, if necessary. Or use it as an auxiliary pump for flooded cellars. The American LaFrance Model DC can handle any type of pumping job. Yet it's the lightest on the market – an easy, two-man carry. And it stows anywhere. Conservatively rated at 50 GPM at 100 PSI and up to 250 GPM at 15 PSI.

Light, easy, two-man carry.

Check These Big-Pump Features:

- Corrosion-resisting, high-tensile aluminum alloy castings
- 9 H.P. Briggs & Stratton 4-cycle engine
- Simple, effective exhaust primer – takes just a few seconds
- Standard 2½" discharge and 2½" suction with cap and screen
- Channel steel frame with collapsible handles

For details and prices, ask your American LaFrance Representative. Or, write us.

AMERICAN LAFRANCE

A DIVISION OF STERLING PRECISION CORPORATION

Elmira, N.Y., U.S.A.

more and more,
wherever you go,
the choice is . . . . **ardmore** HOSE REELS

for EXTRA dependability in the moments of need

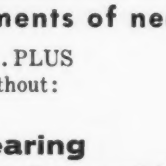
Ardmore gives you quality throughout . . . PLUS
two extra features you should not be without:

1 Combination Bearing and Swing Joint Assembly

The swing joint and reel support bearing are single assembly. No intermediate flexible coupling required. Guarantees perfect reel alignment and pressure-tight assembly. Supplied for all pressure requirements.

2 Extra Safe Drive

Direct metal gear-to-gear drive. No linkage to break in an emergency, cause "play" or extra parts maintenance.



for complete information let us send you the "Ardmore Fire Fighting Reels" catalog.

ARDMORE PRODUCTS | 1827 SHERMER ROAD
NORTHBROOK, ILLINOIS

Eastern Office: 612 Commerce Road, Linden, N.J. • International Sales and Service

Hose Reels may look the same but

ardmore gives you the important difference!

Laurel, Del.—Purnell Motors sales building heavily damaged.
Washington, D. C.—Gallagher's Laundry & Dry Cleaning Co. damaged.
Washington, D. C.—Seventy-one-year-old junior high school building damaged. Believed arson.
Clearwater, Fla.—McCrory's 5 & 10 Cent Store, Larry's Men's Shop and vacant drug store, damaged.
Columbus, Ga.—Gulf Oil storage plant destroyed. Explosion.
Dalton, Ga.—Crescent Theater building damaged.
Macon, Ga.—Southern Chemical Products Co. destroyed.
Sparta, Ga.—Moate's Warehouse heavily damaged.
Ashland, Ill.—Two-story building, housing dental offices of Drs. R. O. and E. L. Beadles, damaged.
Chicago, Ill.—Hooker Glass & Paint Mfg. Co. garage considerably damaged.
Oblong, Ill.—Ward Cortelyou machine shop damaged.
Hazard, Ky.—Ritchie Coal Co. loading ramp damaged, Fire set by masked gunmen.
La Center, Ky.—Riehl Chevrolet Co. destroyed.
Louisville, Ky.—Kentucky Color & Chemical Co. considerably damaged.
Radcliffe, Ky.—Tire department of Knox Service Center destroyed.
Gardiner, Me.—Harvey Distributing Co. damaged.
Lewiston, Me.—L. A. Fuel Co. damaged.
Baltimore, Md.—Martin Furniture Co. heavily damaged.
Capitol Heights, Md.—Stembler & Ford Inc. lumber yard destroyed.
Williamsport, Md.—Federal Silk Mills, Holland Woven Label Mills, Pony Express Terminal and California Spray Chemical Co., destroyed.
Lowell, Mass. — Apartment dwelling, housing Hospital Pharmacy, Rita's Beauty Salon and Princess Beauty Salon, damaged.
Melrose, Mass.—Lumber yard in residential area damaged.
Shrewsbury, Mass.—Shrewsbury Rug & Carpet Co. damaged.
South Boston, Mass.—Raymond's warehouse damaged. Spontaneous combustion.
Tewksbury, Mass.—Former tuberculosis hospital building on State hospital grounds, damaged.
Woburn, Mass.—Tanner's Degreasing Co. destroyed.
Holland, Mich.—Veterans of Foreign Wars, Holland Post No. 2144, clubhouse destroyed.
Pontiac, Mich.—Kroger Supermarket destroyed.
Sault Ste. Marie, Mich.—Factory buildings of Fiborn Limestone Co., subsidiary of Algoma Steel, destroyed.
Butte, Mont.—Fintown Steam Bathhouse destroyed.
Exeter, N. H.—Block housing Sampson's Supermarket, DeBonvill's donut shop, Preferred Finance Co., Burnham Dry Cleaners, unoccupied store and apartments, damaged.
Atlantic City, N. J.—Atlantic City Coat, Apron, Towel and Linen Supply Co. and Aberdeen Laundry destroyed.
Camden, N. J.—Section of shipbuilding ways at New York Shipbuilding Corp. destroyed.
Clifton, N. J.—Hygrade Fuel Oil Co. damaged. Backfire of oil truck ignited gas fumes.
Eatontown, N. J.—Tire firm and two adjoining buildings damaged.
Kenilworth, N. J.—Union Machine Co. building badly damaged.
Newark, N. J.—Four-story apartment dwelling damaged.
Paramus, N. J.—Manero Steak House damaged.
Wildwood, N. J.—Bolero Cafe and nightclub destroyed; adjacent Dayton Hotel and New Jersey Natural Gas Co. building damaged.
Wildwood, N. J.—New Crystal Laundry destroyed.
Binghamton, N. Y.—Binghamton Boys Club Inc. clubhouse damaged. Gas explosion from suicide attempt.
Elmira, N. Y.—McMahon's Barbershop, Tops Taxi Co., Sullivan's Barbershop, Vanderberg's Restaurant, Sullivan's Restaurant and two dwellings, destroyed.
Monticello, N. Y.—Meat market and luncheonette in business district destroyed.
South Troy, N. Y.—One-hundred-and-thirty-year-old Springfield Manor Hotel damaged.
Troy, N. Y.—Apartment dwellings at 547, 549, 551, 553, 555 and 557 Fourth Street damaged.

Troy, N. Y.—St. Ann's Roman Catholic Church considerably damaged.
Waverly, N. Y.—Blue Moon Restaurant building destroyed. Overheated deep fat fryer ignited.
Charlotte, N. C.—Naval Ammunition Depot warehouse destroyed.
Raleigh, N. C.—Ahoskie Package Co. poultry crate plant destroyed.
Shelby, N. C.—M. H. Walker cotton gin destroyed.
Statesville, N. C.—Brown Mercantile Co. damaged. Electric motor.
Cleveland, Ohio—Grant Photo Products Co. damaged.
Toledo, Ohio—Kane Co. appliance wholesaler damaged.
Oklahoma City, Okla.—816 N. Hudson building, housing furniture warehouse and apartments, considerably damaged.
Albany, Ore.—Spencer Apartments damaged. Gas explosion.
Bandon, Ore.—Laurel Grove General Store destroyed.
Coos Bay, Ore.—Chandler Hotel damaged. Kitchen grease.
Eugene, Ore.—Cosmo Tavern and apartments destroyed.
Portland, Ore.—Jones Lumber Co. damaged.
Portland, Ore.—Palmer's Desert Hotel, Hunters Gift Shop and Laborite Mfg. Co., destroyed. Cigarette.
Turner, Ore.—Butt Commercial Charcoal storage building destroyed.
Connellsville, Pa.—Scottdale Joint Senior High School damaged. Explosion.
Fleetwood, Pa.—B & B Feed Mill damaged.
Haverford Twp., Pa.—Mansion known as "Four Winds" destroyed.
Huntingdon, Pa.—Huntingdon Hotel damaged.
Lititz, Pa.—Hopkins Bros. Sawdust Co. damaged.
Philadelphia, Pa.—Six buildings at Hilco Lumber Co. plant destroyed.
Philadelphia, Pa.—Liberty Bell Provision Co. badly damaged.
Philadelphia, Pa.—United Container Co. damaged. Explosions.
Scranton, Pa.—Truesdale's Silver Moon restaurant destroyed. Broiling pot of grease.
Coventry, R. I.—Barn on William J. Beattie farm, housing at least 17 valuable race horses, destroyed.
Providence, R. I.—United Plating Co. building considerably damaged.
Sisselton, S. D.—Red Owl chain grocery, hardware store, tavern, drug store, general store and an appliance store destroyed.
Chattanooga, Tenn. — Chattanooga Bowling Lanes destroyed.
Chattanooga, Tenn.—Esso Standard Oil Co. gasoline terminal damaged.
Hampton, Tenn.—Hampton Elementary School destroyed.
Portland, Tenn.—J. E. Kerley & Sons hardware and furniture store and adjacent Young Drug Co. destroyed; Western Auto Associate Store damaged.
Bryan, Tex.—Beverly Braley Shop and adjoining buildings housing A. M. Waldrop & Co. and Collegiate Shop damaged.
Fort Worth, Tex.—Art Craft Mobilhome Mfg. Co. damaged.
Salt Lake City, Utah—Intermountain Refrigeration Co. considerably damaged.
Swanton, Vt.—Century-old Sash and Blind Shop damaged.
Bellingham, Wash.—Home Market Building, tavern and seven small shops, damaged.
Kennewick, Wash.—Kennewick City Hall destroyed.
Oroville, Wash.—Oroville Fruit Warehouses destroyed.
Seattle, Wash.—University of Washington fraternity house destroyed.
Spokane, Wash.—St. Mary's School damaged.
Wapato, Wash.—Yakima Indian Long House destroyed. Gas explosion.
Nelson, B. C.—South Nelson Elementary School destroyed. □□

Loses Hand in Rocket Blast

A Salem, Ind., youth lost a hand on September 10 when a homemade rocket exploded. Later at a hospital, Paul Brown, 17, calmly told his mother, "I have learned my lesson." He hoped other teenagers would take heed of his accident.

THE MINUTE THAT WAS FOREVER FOR THE FACE AT THE WINDOW

The ladderman had a brief glimpse of a terror-stricken face at the window. Just as he reached it, the floor collapsed and the face disappeared.

But it wasn't that final minute which decided the fate of the face in the window—it was one of the seven minutes it took to pull the hose off the pumper and get water on the fire.

Bi-Lateral flips off the pumper faster because it's more flexible, and because it folds flatter. Bi-Lateral construction allows *more* hose on each pumper—enabling you to cover more fire, faster. Save time—save lives—with Bi-Lateral.

Bi-Lateral construction saves you *more* than precious minutes, because the same flat-folding feature is responsible for the protection of the lining. This means you replace it far less often—*you save precious dollars, too!* Bi-Lateral costs less per foot per year.

Bi-Lateral **FIRE HOSE COMPANY**
20 N. Wacker Drive · Chicago 6, Illinois

MANUFACTURERS' NEWS

Continued from page 1056

New Gould Battery

A new line of lightweight batteries has been announced by Gould-National Batteries, Inc., Trenton 7, N. J., for alarm systems and applications where batteries are used as stand-by emergency power.

Said to be easier to handle because of reduced over-all weight, it is claimed the plastrite jar permits increased battery room capacity and reduces storage rack requirements. They are available in capacities from 50 to 1,140 ampere hours.

Federal Vibratone

Federal Sign and Signal Corporation, 13602 South Western Avenue, Blue Island, Ill., has announced its new "Vibratone" horn which is said to simplify the installation of emergency alarms and coded signal systems in public buildings, industrial plants and institutions.

The horn comes in three styles to fit into any 4-inch-square electrical outlet box or it can be adapted to mount on existing electrical facilities. Vibratones are claimed to be the first vibratory horns to receive the approval of Underwriters' Laboratories for continuous duty.

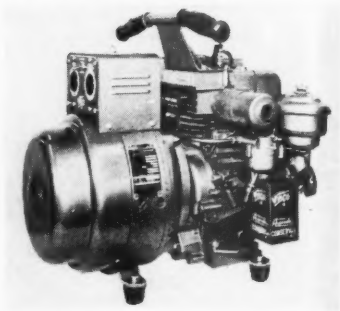
New Flex-O-Lite Plants

Flex-O-Lite Manufacturing Corporation, St. Louis, Mo., has announced two new manufacturing plants, one in St. Thomas, Ontario, Canada, and the other in Paris, Tex., which soon will be in operation. Both will manufacture industrial glass spheres used for reflective purposes in paint, signs and in surface treatment of metals.

New Ignition Analyzer

The AC Spark Plug Division, General Motors Corp., Flint, Mich., announces the ACilliscope electronic spark plug analyzer. It is claimed the new unit will detect gap wear, oil fouling and lead deposit fouling.

New Winco Generator



Wincharger Corp., Sioux City 2, Iowa, has introduced the Winco Lite portable generator rated at 2,500 watts. It weighs 123 pounds and is powered by a Briggs & Stratton 4-cycle aluminum engine. The unit is equipped with Automatic Conserv-er Idling Control, and supplies 115 or 230 volts a.c.

Aluminized Safety Coat

Midwestern Safety Manufacturing Company, Mackinaw, Ill., has announced a new aluminized fabric coat as an addition to its line of protective clothing for fire fighters. Made from Minnesota Mining and Manufacturing Company Aluminized Fabric No. 82, it is claimed to reflect more than 90 per cent of radiant

HOME

HOME . . .
Symbol of community strength.
HOWE . . .
Silent Sentinel in more than 10,000 communities . . . offering confident, dependable and economical fire protection for more than four generations.

Your HOME . . . best protected with HOWE equipment.

HOWE-DODGE
750 GPM Class A Pumper

HOWE

HOWE

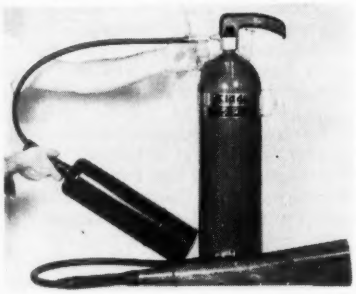
"dependable fire apparatus since 1872"
FIRE APPARATUS COMPANY
Dept. FE-119 • Anderson, Indiana, U. S. A.

heat away from the wearer. Three types of snap-in liners are available to make the coat suitable for all climates and conditions. Full suits, hoods and mittens made from aluminized fabric are also available from this manufacturer.

New M-S-A Regulator

A redesigned demand regulator for use with breathing apparatus has been announced by Mine Safety Appliances Company, Pittsburgh, Pa. The new regulator is said to feature high flow with slight breathing effort, a high-efficiency filter for protection against contaminants, easy field serviceability and sturdy construction.

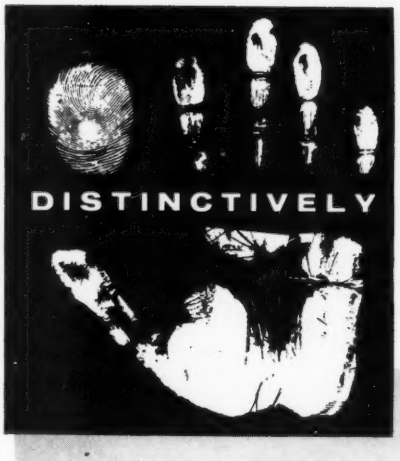
Kit Upgrades Extinguishers



A new hose and discharge horn assembly is being offered by Walter Kidde & Company, Inc., Belleville, N. J., for its 10, 15 and 20-pound carbon dioxide extinguishers now in the field. Replacement of older hose-horn assemblies with the new equipment is claimed to upgrade the fire extinguishing ability of the older portables equal to Underwriters' Laboratories ratings of 8 B:C, 10 B:C, and 12 B:C, respectively. Conversion is accomplished by simply unscrewing the old hose and replacing with the new.

New Motorola Installation

Dade County, Fla., has contracted with Motorola Communications & Electronics, Inc., 4501 West Augusta Boulevard, Chicago 51, Ill., for the installation of microwave and VHF communications equipment for a civil defense disaster communications network. The approximately quarter-million-dollar contract consists of



YOURS

Just as fingerprints identify every individual, your badge should reflect the individuality of your department.

EXCLUSIVE . . . Custom Design Badge Service for you . . . No other like it anywhere! Blackinton Custom Design Service combines the individual characteristics and historical background of *your* department to produce *your own exclusive departmental badge.*

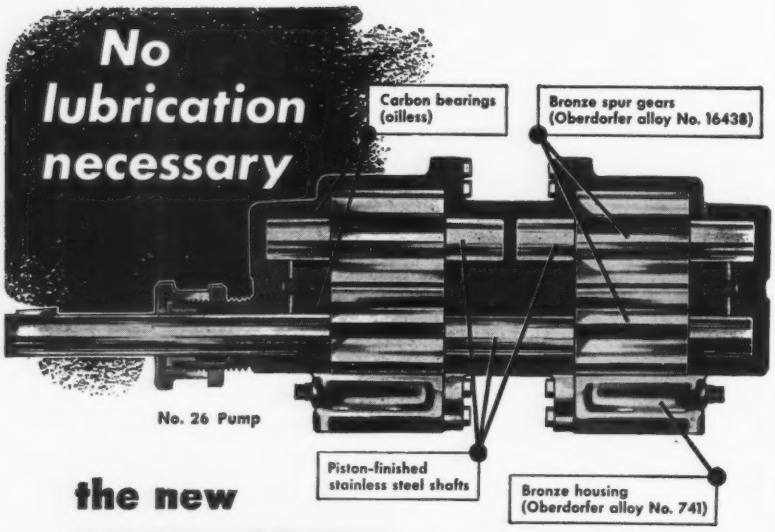
For a specially designed badge every member of your department will be proud to wear, contact your badge or uniform supplier for complete information on Blackinton badge customizing *at no obligation.*

Shown are just a few of the hundreds of handsome Custom Designed Badges already in service throughout the country.

Available through your badge supplier

BLACKINTON

V. H. BLACKINTON & CO., INC. • Attleboro Falls, Mass.


No lubrication necessary
Carbon bearings (oilless)
Bronze spur gears (Oberdorfer alloy No. 16438)
No. 26 Pump
Piston-finished stainless steel shafts
Bronze housing (Oberdorfer alloy No. 741)

the new

OBERDORFER BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES —No. 26—$249.50 No. 13—$122.50

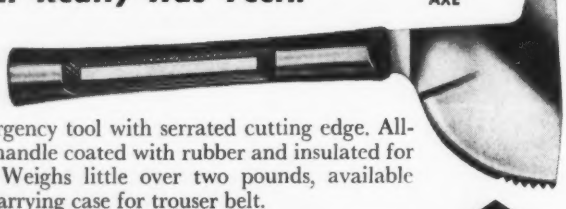
Slightly higher west of Rockies

FIRE PUMP DIVISION, Oberdorfer Foundries, Inc., Syracuse, N. Y.

NEW! ATLAS SERRATED CRASH AXE NEW!

An Axe That Really Has Teeth

ATLAS NO. 463 AXE



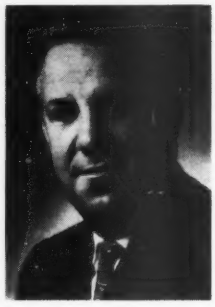
An ideal emergency tool with serrated cutting edge. All-steel forging, handle coated with rubber and insulated for 20,000 volts. Weighs little over two pounds, available with leather carrying case for trouser belt.

ATLAS SAFETY EQUIPT. CO. INC.
173-179 N. 10 ST., BKYN 11, N. Y.

four 250-watt base stations in the 450-mc. band, two 60-watt base stations, and 160 mobile units, including 40 motorcycle "Dispatcher" radiophones. A 6000-mc. microwave system will connect the four base stations.

Appointments and Promotions

Roy W. Wilson of Detroit has been elected president of Ward La France Truck Corporation, Inc., Elmira, N. Y. Mr. Wilson was formerly vice president



of Napco Industries, Detroit, manufacturers of Federal trucks. Prior to his association with Napco, he headed his own firm in Detroit.

Robert A. Cline has been named staff assistant to Paul W. Eberhardt, vice president of Kidde Ultrasonic Detection Alarms, Inc., Clifton, N. J. In his new position he will be responsible for the coordination of research and development, new products, sales, sales promotion, sales research and engineering.

George B. Monk has been appointed district manager of the New York and New Jersey areas for Fabric Fire Hose Company, Sandy Hook, Conn., it was announced by William Cole, general manager.

Mr. Monk, through his association with leading producers of rayon and synthetic fibers, is experienced in the technical and promotional aspects of synthetic yarns in industrial end uses. Prior to joining Fabric Fire Hose Company, he was with North American Rayon Corporation, Allied Chemical Corporation of New York, and Chemcell Fibres Limited of Montreal, Canada.

Charles Herrin has been named sales manager, two-way radio products, Motorola Communications and Electronics, Inc., for the 10-state western area consisting of Washington, Oregon, California, Idaho, Nevada, Wyoming, Montana, Colorado, Utah and Arizona. He will headquarter at 1616 Rollins Road, Burlingame, Calif. Herrin, with Motorola the past six years, has been an account executive in this area since April 1958. He had been appointed a zone manager in 1956.

FWD Corporation, Clintonville, Wis., has appointed three new dealers to sell fire apparatus. **Booth Fire Equipment Co.**, 787 Harmon Avenue, Columbus,

Ohio, will have a territory made up of 22 counties in Ohio; **Melvin Fazenbaker and Son**, 918 Louise Avenue, Morgantown, W. Va., will sell 14 West Virginia counties; and **George R. Lindsay**, P. O. Box 555, Hagerstown, Md., will cover 14 counties in Maryland.

Smith Combustion Equipment Co., Chicago, and Instrument Service & Equipment Co., Cleveland, have been appointed sales representatives by Protection Controls, Inc., Chicago 46, Ill., to handle regional sales of the company's combustion safeguard controls.

Publications Available

The Kuhns Brothers Co., Dayton, Ohio, has published Catalog 2-PF describing its complete line of UL-listed ductile iron pipe fittings for use in fire protection water lines, carbon dioxide piping and other industrial use.

FWD Corporation, Clintonville, Wis., explains its expanded field service program in a new booklet, "10 Mobile Field Service Engineers." Prepared for fleet operators and maintenance supervisors, it includes a complete listing of parts and service headquarters.

The Manufacturing Chemists Association, 1825 Connecticut Avenue, N. W., Washington 9, D. C., has published a safety data sheet on safe handling procedures for diethylenetriamine. This yellow liquid, smelling strongly of ammonia, may cause burns to the skin or eyes and repeated inhalation of the vapors may result in an asthmatic-type response. It is used as an intermediate in the preparation of textile, paper and agricultural chemicals, in coatings and adhesives, in the polymerization and vulcanization of natural and synthetic rubber and in numerous other applications.

The data sheet covers the properties, hazards, employee safety, handling and storage, tank cleaning, waste disposal, medical management and first aid. Copies of SD-76 are available at 30 cents each.

Precision Equipment Co., 4411F. Ravenswood Avenue, Chicago 40, Ill., has published a new "Laugh Book," which is said to be of value to those who make an occasional public address or luncheon speech. Copies are free for the asking.

Wheeler Protective Apparel, Inc., 224 West Huron Street, Chicago 10, Ill., has issued a new flyer describing the company's line of aluminized clothing and other equipment.

Ferno Manufacturing Co., 6th and Pine Streets, Greenfield, Ohio, has issued a new catalog describing its full line of ambulance cots and stretchers.

Goodall Rubber Co., Whitehead Road, Trenton, N. J., has issued a new catalog "FH-59" which decribes its complete line of "Fire-Flex" fire hose as well as hose fittings and firemen's safety clothing and equipment. □□

NEW

GRAPHIC® 35 ELECTRIC

ONLY

CAMERA WITH BUILT-IN POWER DRIVE – AUTOMATICALLY ADVANCES FILM, COCKS AND TRIPS SHUTTER

Never before has there been a 35mm camera . . . so clean in appearance . . . so uncluttered in design . . . so marvelously easy to use as the new Graphic 35 Electric. Because never before has there been a camera with **built-in power drive** . . . the most revolutionary advancement in 35mm photography.

Just squeezing the trigger release trips the shutter, advances the film and cocks the shutter for the next exposure. The secret behind its performance is a battery-operated, powerful, electric motor, built into the take-up spool.

Focusing and correct exposure settings can be made without taking your eye from the viewfinder. One dial sets the proper combination of diaphragm and exposure. The built-in exposure meter reading is visible in the viewfinder as well as through the window on the top of the camera.

Normal, wide angle or telephoto lenses can be switched in a second. Each lens automatically couples to rangefinder.

Twin Depth-of-Field Indicators are easy to read, automatically adjust to the interchangeable lenses. Has famous Synchro-Compur M-X Shutter, with speeds to 1/500 and built-in self-timer. Choice of Ysarex f/2.8 or Steinheil Quinon f/1.9 lens.

Here is an automated camera, ideally suited for fire department work. Ask your Graflex dealer for a demonstration. He's in the "Yellow Pages," or write Dept. FE-119, Graflex, Inc., Rochester 3, New York. A subsidiary of General Precision Equipment Corp.

GRAFLEX® | A GENERAL PRECISION COMPANY

ST. LOUIS FIRE

Continued from page 1052

dered to the top of the tank to ventilate. They were stymied due to the difficulty of removing the cover, the cramped space, as well as the heat and gases at top of tank. Weighing the factor of safety and time necessary to remove the cover and the growing intensity of the fire, all men were ordered to the ground.

By this time the outer coating of paint on the tank was starting to blister, flake and fall to the ground. In order to apply water into the tank to prevent a possible explosion or fissures and probable collapse, a port was ordered cut by torch at a point approximately 30 feet from the base. Smoke and flame emitted from this opening and the use of hose streams through this port did not alleviate the intensity of the fire to any great degree. Hose streams were played on the exterior of the tank to aid in reducing the pressure build-up, as well as providing cover for the exposures. In the immediate vicinity was a huge gasholder of the floating bell type and various plant buildings of an advanced age. The latter had wooden roof construction heavily coated with oil.

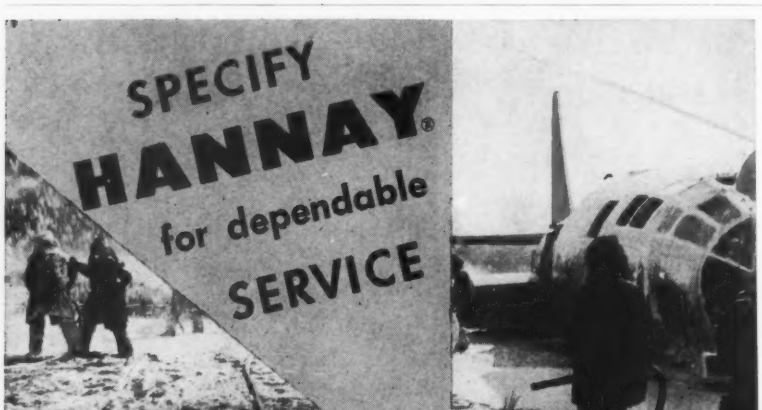
As the fire progressed in the tank, the sound of heat blast as well as eruptions due to the formation of gas pockets in the gridding were plainly audible and visible by the rocking of the tank on its base. By this time it was apparent that drastic action was necessary if the pressure within the tank was to be relieved and the possibility of an explosion with its subsequent hazard of burning wooden embers scattered far and wide was to be reduced.

It was then decided to summon firearm sharpshooters from the police department. Upon arrival, these men were requested to open holes in the plating at the highest point possible on the tank. Even though the danger of ricocheting was great on the rounded surface, 65 rounds of .30-calibre ammunition were fired expertly and accurately, opening a series of holes 2 or 3 inches in diameter approximately 6 to 12 inches below the top of the tank. Plumes of gas followed by smoke emitted as a result of the improvised but effective ventilation and most of the eruptions ceased.

Cellar pipes employed

With the danger of explosion somewhat alleviated, the firemen then began more positive methods of extinguishment. Cellar pipes and bent pipes were employed at the base and upper ports which aided in the cooling. These nozzles were somewhat impeded in their distribution and reach by parts of wooden hurdles that had begun to fall from the upper reaches of the tank, but officers and men held on doggedly in spite of the continued personal risk. Pipes on the exterior of the tank previously described were utilized where possible, and hose fittings were procured from the repair shop and sweated to piping that opened into the tank providing an improvised standpipe for flooding the tank with water.

The battle lasted through the night and into the following morning, before it appeared that the upper hand was being gained. With the final extinguishment not yet accomplished, it was decided even though smoke was still visible but not under excessive pressure, it was feasible to remove the cover from the tank top. Four members of the rescue squad were selected and with the necessary tools and equipment, plus life line and belt, ascended to the top of the tank covered by a heavy water spray from lines manned by engine crews on the adjacent gas holders. The terrain and



U.S. Air Force O-11B
Photo courtesy American-LaFrance

HANNAY reels used on Air Force fire fighting units

Hannay reels in specially designed cabinet installation swing out for fast operation . . . provide Air Force fire fighting teams with water and chemicals *at the nozzle* for instant response. For your equipment, *specify* hose reels designed and built by active firemen . . . insist on HANNAY.

Standard Hannay electric rewind reel with horizontal auxiliary hand crank rewind. Write for complete catalog.

SUSTAINING MEMBER

Hose Reels by HANNAY®

CLIFFORD B. HANNAY & SON, INC., WESTERLO, NEW YORK

cramped quarters did not lend itself to the use of aerial ladders at any time during the operations. These men succeeded in safely removing the tank cover and by lowering hose lines to various levels, extinguished the fire. Following a post mortem of this fire, it is believed that workmen dismantling similar tanks should remove bolted or heavy covers at the top as a preliminary safety precaution prior to burning or use of cutting torches. The lack of top openings for pressure relief as well as extinguishment was the foremost problem at this particular fire. There still remain several of these tanks on gas manufacturing property in St. Louis. This type of installation has obviously become obsolete and may pose similar problems in the future. □□

FIRE-RETARDANT PAINT

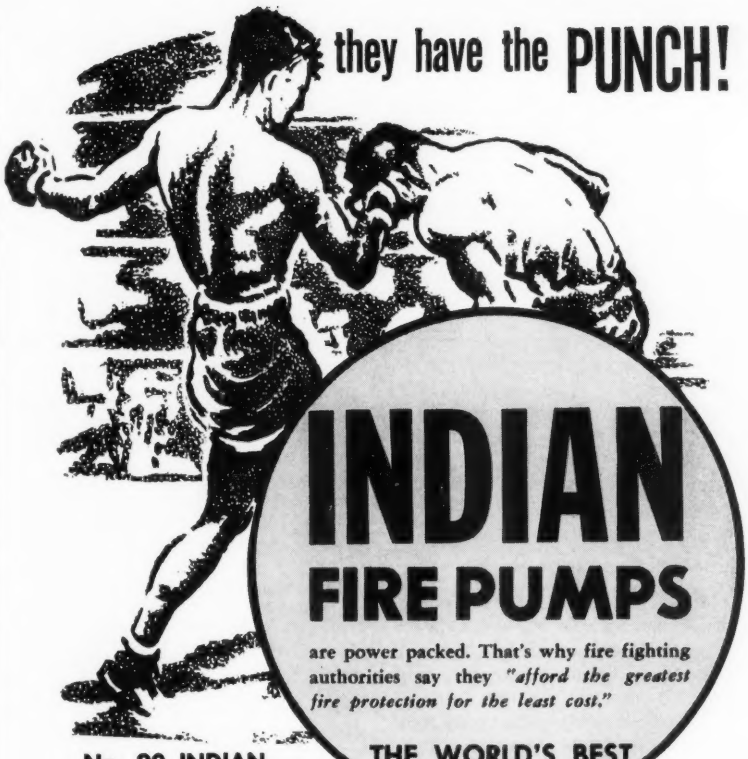
Continued from page 1051

enues. The garage had been used for housing and maintenance of eight concrete mixer trucks. A fire-retardant paint had been sprayed on the exposed trusses, sheathing and bridging of the roof about three years before, at a specified application rate of 200 square feet per gallon.

As reported by A. J. Mullaney, former chief fire marshal and fire commissioner of the City of Chicago, the fire began when sparks from an acetylene torch being used for repair work ignited gasoline vapors produced by spillage from a recently filled fuel tank. Employees first attempted to handle the fire themselves with two CO_2 and four soda acid extinguishers. Assuming that the fire was under control, they went to get more extinguishers and on return found the entire garage involved. It was not until then that a telephone alarm was called in to the Chicago Fire Department—A delay estimated at about 20 minutes. The first alarm at 2:35 a.m. brought one engine company, while a second alarm at 2:40 brought three additional engine companies. Fire department operations were not completed at the premises until 4:36 a.m., fully two hours after the time of the first alarm.

According to Commissioner Mullaney, the 20-minute delay in sounding the alarm could have resulted in sufficient structural damage, for collapse of the roof, if it had been unprotected. Had collapse occurred, virtually total destruction of the building and contents would have followed, without considering possible damage to the viaduct.

The fire-retardant paint, even though exposed to flame and heat for far longer than the 20-minute alarm delay, protected the combustible


they have the PUNCH!
INDIAN
FIRE PUMPS
are power packed. That's why fire fighting authorities say they "afford the greatest fire protection for the least cost."
THE WORLD'S BEST

No. 90 INDIAN
(Sliding Pump Type)

Today everyone demands the most for his dollar. **VALUE** and **LONG LIFE** come first. That's why so many insist on **INDIAN FIRE PUMPS** — they do a better job and last longer. Inexpensive spare parts are always available in a hurry. Put more smash into your fire fighting drive — make **INDIANS** your first line of defense.

No. 80 INDIAN
(Lever Type Pump & Handle)

We have improved the brass sliding pump on the No. 90 **INDIAN** so that a boy can use it with ease at all times. When you buy your next lot of **INDIANS** you will be very much pleased with them and you will find it is a pleasure to operate them.

Both Types Approved by Underwriters' Laboratories, Inc.

SEND FOR NEW CATALOG!

D. B. SMITH & CO. *"for Over 70 Years the Leaders"*
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weight-bearing members so that firemen were able to ventilate the roof, enter the garage and extinguish the fire without undue fear of collapse and serious injury to themselves.

While the wood truss members and sheathing were charred by flame (Fig. 5), there was no structural failure and no burning through of any part of the roof. The exterior view (Fig. 4) taken after the fire, shows that neither the top side of the roof nor, of course, the underside of the viaduct was damaged in any way.

The cost of repairs to all trucks, including complete repainting, was estimated at about 10 per cent of their value. The garage resumed its normal functions within a couple of days and all damaged trucks were themselves returned to service by April 15.

The critical time factor

The function of fire-retardant paint, which Commissioner Mullaney stated was primarily responsible for the small loss in the Chicago garage fire, was simply to prevent ignition of the wooden roof for ample time to permit extinguishing action. As noted above in the case of the New York garage fire, however, prompt alarm and immediate, skillful action by a fire department cannot in all cases overcome the built-in dangers in an inadequately protected structure. Even with the unusually long alarm delay of 20 minutes in the Chicago fire, fire-retardant paint still gave the firemen a time advantage. □□

NBFU Issues Two Fire Prevention Films

The National Board of Fire Underwriters has issued two fire films.

One of the films, "Penelope Changes Her Mind," is designed for showing before primary and elementary school children. The film, an animated cartoon, explains the fire triangle in a manner interesting to, and easily understood by children, and shows the principal causes of fire. The other film, for adults, is entitled "The Challenge," and is a revised version of the National Board's popular film, "Crimes of Carelessness."

Both films are in color and run approximately ten minutes each. Prints of these latest additions to the National Board's film library will be available shortly for general distribution through the Bureau of Communication Research, Inc., 267 West 25th Street, New York 1, N. Y. On the west coast they will be available through the National Board's San Francisco office at 465 California Street, San Francisco 4, Calif.

SCHOOL FIRE TESTS

Continued from page 1046

members of the Los Angeles Fire Department have compiled the voluminous data accumulated from the test fires, the changes in the school-safety measures of California and other states will not be known; however, these are likely code revisions:

1. Double-loaded corridor plans are probably on their way out for multistory buildings unless countermeasures can make them safe.

2. Every reasonable effort will be made to reduce the present large load of classroom flammables, including dangerous ceiling materials.

3. Extensive sprinklering of old buildings, particularly, will no doubt be specified and this measure will be used to compensate for some types of design and structural deficiencies.

4. There will be more stringent requirements for automatic fire alarm systems that will not only alert the occupants of a school but will simultaneously summon the nearest fire department.

5. Where it is structurally and economically practicable, there will undoubtedly be orders for the enclosures of stairshafts in old buildings; or an

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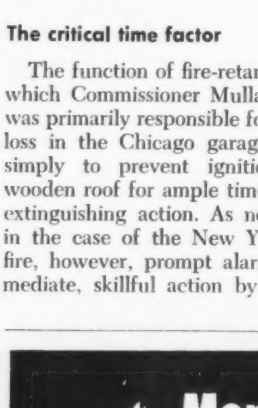
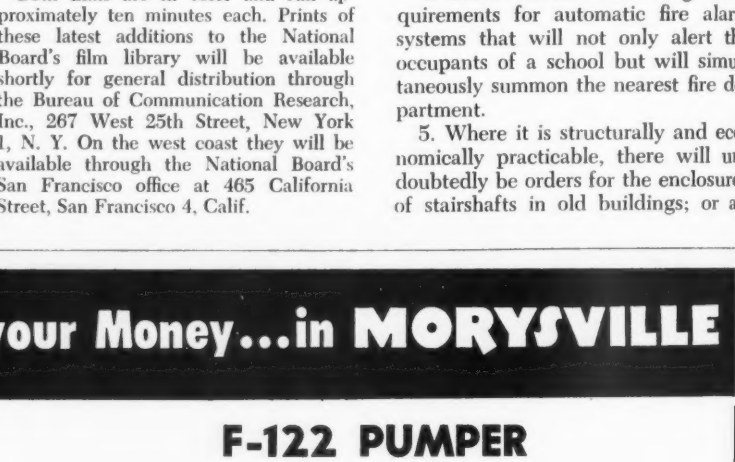


F-122 PUMPER



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alternative may consist of heavy sprinklering.

6. In extreme cases. it may be necessary to require the erection of exterior, fireproof stairways at the four corners of a multistory building.

7. Unless alternate and adequate measures can reduce the hazards inherent in plain glass door windows and in transoms, these may require blanking off with gypsum board or by some other safe material.

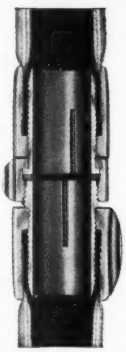
8. In addition to banning flammable ceiling and wall material in new construction, it is possible that orders may require eliminating it in existing structures.

9. There is a strong likelihood of requiring the elimination of all interior connections between basements and the rest of the building with only exterior access provided. This would apply only where basements are used for other than toilet purposes.

The following statement by Fire Marshal Yockers during a recent meeting of the California State Fire Advisory Board summarizes the philosophy behind whatever requirements may be set up: "Even in new construction, I doubt that we are getting a reasonable degree of safety for our children. At present, if everything is in order (in a school building) and everything goes fine, maybe a school is safe, but we know things probably won't be fine and in order.

"From observations during the test fires and from studies of temperature charts and smoke-density readings, it appears obvious that it is almost impossible to insure avenues of escape for children from a multistory building employing a central, double-loaded corridor with stairshafts either enclosed or unenclosed. To the building official, the fire official and the architect, this may seem to be a drastic conclusion but no dependable solution has yet been proposed that would guarantee the safe exit of children from a burning school building of the type set forth above even though the building itself may be of fire-resistive construction.

"It has been common practice to design multistory classroom buildings so as to use corridors, stairshafts, transoms and even door openings in a system of ventilation. Even though stairways may be enclosed and their openings protected with fire doors equipped with self-closing, fusible-link operated devices, it is known that sufficient heat and smoke can penetrate the corridors and stairshafts to make them unusable before fusible links can operate. It is therefore felt that the standards for new construction must be changed if reasonable life safety is to be provided." □□



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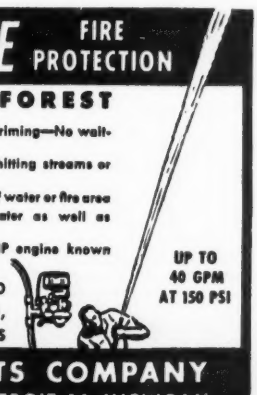

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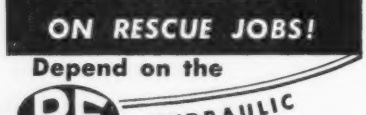

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the round table

discussion of current fire department and fire management problems

Who Is Responsible for Fire Prevention Inspections?

FIRE PREVENTION inspections in recent years have become a major part of the activities of practically all fire departments. In many cases the administration of the inspection activities has become quite detailed and most fire chiefs have delegated the authority to operate the programs to designated assistant and deputy chiefs or fire marshals. Frequently special personnel are assigned to this demanding work in order that continuing results be obtained.

In addition, coordination of fire company inspections of homes, business and factory buildings is usually carried on by the fire prevention personnel in order that the greatest benefit may be derived from such a program. In most cases, all personnel assigned to fire prevention work are uniformed fire fighters. There are, however, some important exceptions.

To review the methods now being employed by representative fire departments, FIRE ENGINEERING posed the questions appearing elsewhere on this page. The editors will welcome further comment from our readers. Address replies to Round Table Editor, FIRE ENGINEERING, 305 East 45th Street, New York 17, N. Y.

The Discussion

C. R. Duggan, Chief, Rocky River, Ohio: All officers and men in the department are responsible for fire prevention inspections.

The chief of the department and fire warden are in charge of personnel.

All men making inspections are uniformed firemen.

We have zoned our city into three zones and at no time does any man go into the same zone he has inspected before, except to check violations.

Columbus J. Pasetti, Chief, Westerly, R. I.: As chief of the fire department and the only full-paid man, all inspections are under my supervision. Any of the three assistant chiefs, who are partly paid, may accompany me if they so desire.

I personally carry out this fire prevention program 52 weeks a year in schools, theaters, commercial establishments, hospitals and convalescent homes and investigate any other miscellaneous complaints, such as blocked halls or stairways. I consider such inspections help keep people fire-conscious and by alerting them to comply with all safety rules, I feel that many possible fires are stopped before they start. And that is the easiest and safest time to stop them!

During Fire Prevention Week, a program is set up and carried out by a company comprised of men and officers from our three volunteer companies, under my supervision as chief. Such a program, carried out in our schools, theaters, and radio stations and comprised of poster and essay contests and various other activities, is sponsored and paid for by the fire department. In the interest of public safety, we are glad to sponsor and carry out any such program. I have personally thought and advocated for some time, that inasmuch as our insurance companies receive as many, if not more benefits than anyone else, I feel that some financial assistance should be forthcoming from such sources.

Jesse G. Hunter, Chief, Cedar Rapids, Iowa: Section 1 of the ordinance setting up the bureau of fire prevention reads as follows: "A bureau of fire prevention of the City of Cedar Rapids, Iowa is hereby established which shall be composed of the chief of the fire department and one other member of the fire department to be selected by the chief of the fire department, which appointee shall be designated as 'director of the bureau

THIS MONTH'S QUESTIONS

What person in your department has direct responsibility for fire prevention programs?

Does this person have direct supervision of inspection personnel at all times? If not, state manner of supervision.

Are inspections carried out solely by the fire prevention bureau or comparable office? If not, how are they conducted?

Are all inspectors uniformed men? If not, briefly state type of personnel filling positions.

of fire prevention,' and who shall hold office at the pleasure of the chief of the fire department.

"The chief of the fire department may detail such other members or officers of the fire department as inspectors as shall from time to time be necessary."

Under the chief of the fire department, the director of the bureau of fire prevention has direct supervision of the inspectors assigned to the bureau.

In addition to the inpections carried out by the fire prevention bureau, all fire companies participate in an inspection program. As soon as the weather permits in the spring, in-service companies inspect within their districts all of the schools, hospitals, churches, nursing homes, mercantile and industrial buildings. From the first of September until the weather gets too inclement, home inspections are carried out in the entire city. With the exception of the home inspection program, all other inspections are carried out primarily for familiarization of the fire fighting personnel with the buildings and hazards within their districts.

Except for minor hazards, housekeeping and such that can be cleaned up on the spot, all violations of the fire prevention code are relayed to the fire prevention bureau.

All inspectors are uniformed firemen.

Ailie A. Feldman, Chief, Denver, Colo.: In our department, the assistant chief of the fire prevention bureau has responsibility for fire prevention inspections and supervises the personnel.

We assign assistant chiefs to each of the respective seven districts. These districts funnel back their reports to the fire prevention bureau.

All inspectors are uniformed at all times.

John J. Nelligan, Chief, Bangor, Me.: The captains in all companies are responsible for fire prevention inspections.

They have direct supervision of personnel at all times.

The fire department officer in carrying out inspections, will from time to time call on the city electrical inspector and the city building inspector to recheck with him on some buildings.

In our department, all inspectors are uniformed firemen.

John Mordhorst, Chief, Fremont, Nebr.: The fire chief is responsible for fire prevention inspections and has direct supervision over personnel.

All of the personnel in our department make inspections. This is done so the firemen will get to know the various buildings.

Our inspectors are uniformed firemen.

J. E. Winborne, Chief, Pampa, Tex.: While I am the fire marshal and fire chief of our department, I believe we should have a full-time fire marshal. We have a full-time inspector, who is responsible for fire prevention inspections. In the event he is overloaded, I assist him.

This person has direct supervision over

From one chief to another . . .

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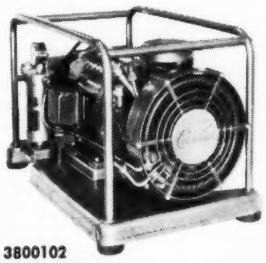

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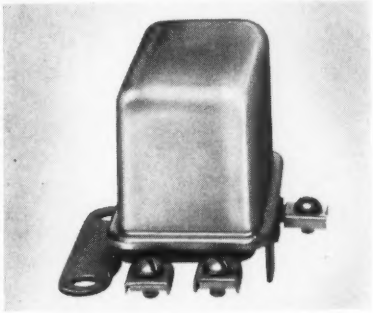

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inspection work and personnel. We keep a card file and phone number on all places.

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E. W. Fields, Chief, Omaha, Neb.: The chief of the fire prevention bureau and inspection division has direct responsibility for fire prevention inspection and the fire prevention program of the Omaha Fire Department.

He has direct supervision over all fire department inspectors and members of the fire prevention bureau, and the inspectors assigned to each of the four districts.

In addition to the inspections carried out by the fire prevention bureau, we have our home inspection program which he coordinates through the district chiefs and the inspectors assigned by the fire prevention bureau to each of the respective districts.

Company officer's inspections are coordinated by the chief of the fire prevention bureau, the battalion chief of each district, and the force of the bureau.

All inspection is done in uniform and all inspectors are firemen.

The only inspections which the fire prevention bureau does not supervise are what we call our "acquaintanceship inspections." These inspections are conducted by the assistant chief, district chiefs and the companies, and are inspections to acquaint the fire fighting personnel of the department with specific problems relative to fire fighting, and are fire ground preplanning sessions, mainly conducted for the purpose of preplanning activities in the case of a fire. These are under the supervision of the heads of the fire fighting branch, rather than the fire prevention bureau.

We have found that this procedure works out successfully. Of course, our work is coordinated with the inspectors of the building, health, plumbing, electrical and other departments. Often joint inspections are made with these departments.

Frank F. O'Callaghan, Chief, Baton Rouge, La.: The district chief of our department has direct responsibility for fire prevention inspections. He also has direct supervision over inspection personnel.

Inspections are carried out by both members of the fire department and inspection bureau.

All of our inspectors are uniformed firemen.

J. L. Evans, Chief, Savannah, Georgia: The chief fire inspector is responsible for fire prevention inspections and supervises inspection personnel.

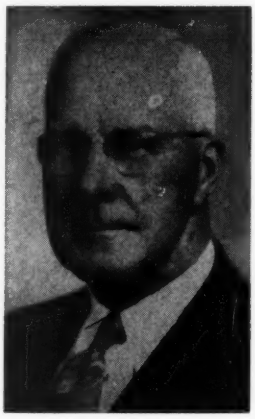
Inspections are carried out by the fire prevention bureau, except during Fire Prevention Week. Companies also make inspections in their own districts.

All inspectors in our department are uniformed firemen. □□

Persons in the News

Jay Stevens Retires

Jay W. Stevens, one of the country's foremost proponents of fire prevention, and assistant manager of the San Francisco office of the National Board of Fire Underwriters, retired October 31 after 38 years of service with the Board. A nationally known authority on fire prevention, Jay has been engaged in this work with the National Board since 1921, and has traveled the entire country in its promotion. He is executive secretary of the International Association of Fire Chiefs, in which he has been active since 1926, chairman of its fire prevention committee, and in addition has been secretary-treasurer of the Pacific Coast Inter-Mountain Association of Fire Chiefs since 1922. He was a director of the National Fire Protection Association in 1922-24. In 1927, he traveled to the various states organizing the present divisional associations of the International Fire Chiefs.



He conceived the idea of the home inspection program which was launched by the I.A.F.C. in 1950 and was its strongest proponent. Today, this program ranks among the leaders in fire prevention endeavors. He also organized the present program of annual Governor's Fire Prevention Conferences which are held under the joint sponsorship of the International Chiefs and the states.

A native of Nebraska, Jay began his career in fire fighting and fire prevention in 1900 when he became a volunteer fireman in the Weston, Neb., Fire Department. In 1903 he moved to Oregon and joined the Portland Fire Department as a truckman in 1904. A year later he was promoted to lieutenant, and in 1906 was advanced to captain. In 1908 he was appointed battalion chief and in 1913 became assistant chief and fire marshal.

His fire prevention activities aroused the attention of fire engineers and underwriters and as a result, he was called to San Francisco to head the Fire Prevention Bureau of the Pacific in 1917. In

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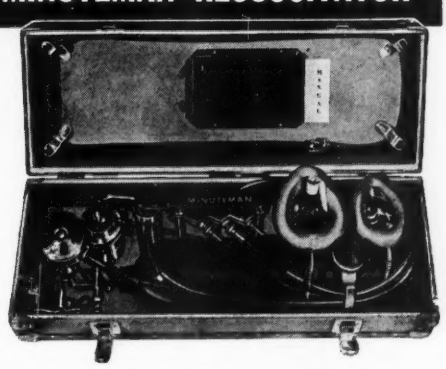

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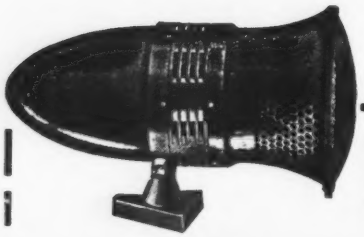

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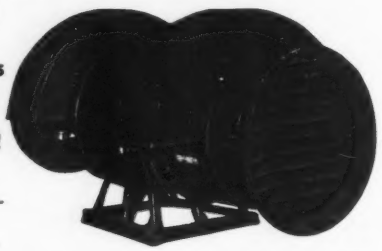

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1917, too, he organized the State Fire Marshal's Office in Oregon.

A few years later in 1921, the National Board established a branch office in San Francisco, taking over the duties of the Fire Prevention Bureau, and he was named to head the fire prevention activities of the new branch.

In 1924 he was appointed State Fire Marshal of California and served without pay in that capacity until 1940. In 1941 he was named fire coordinator of the Ninth Regional Civil Defense area and served in this position for the remainder of the war. In January 1943, Governor Earl Warren asked that his services be again loaned to the State of California for the purpose of reorganizing the Fire Marshal's Office. He served the state once again for a six-month period culminating in the present organization of a full-time marshal.

Winkley Appointed Oregon Chief Deputy Fire Marshal

Eldon Winkley was appointed chief deputy state fire marshal of Oregon on September 1 to succeed E. A. "Chuck" Taylor who retired after 30 years service. Previous to coming to the Fire Marshal Department, Mr. Winkley, a graduate of Oregon State College, had 24 years of service as an officer in the Corvallis, Ore., Fire Department. In July 1948, he was employed by the Fire Marshal Department as an instructor in the fireman training program. From 1951 to 1957, he was deputy fire marshal I, and in December, 1957, he was promoted to deputy II. Mr. Winkley will continue his promotion of home fire prevention, mutual aid and civil defense.

Colorado Springs Appoints Deputy Chief

Argus Cummings was appointed deputy chief of the Colorado Springs, Colo., Fire Department on June 26, filling the position which was recently created by the city. Chief Cummings joined the fire department in 1947 and was promoted to captain in 1950.

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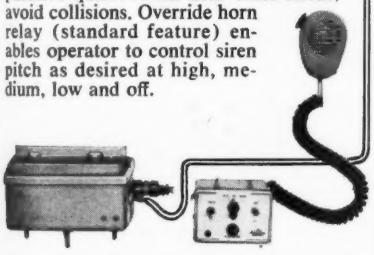

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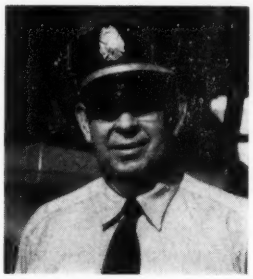
Haltiwanger Promoted

Assistant Chief N. R. Haltiwanger has been promoted to chief of the fire department, U. S. Naval Station, Green Cove Springs, Fla., succeeding Chief Daniel G. Aid, who recently retired on a medical disability.



Chief Haltiwanger is a veteran of 40 years in the fire service, which began in 1919 when he entered the Jacksonville, Fla., Fire Department. He retired in 1946 as a captain to assume the duties of assistant chief at the Naval activity.

Samsell Retires; Named to State Post

Chief John P. Samsell, Morgantown, W. Va., Fire Department, retired on October 15 after 24 years of service. He has been appointed assistant state fire marshal and will act as coordinator for that office with West Virginia fire departments. In addition, he will assist in fire prevention activities and in organizing new fire departments..

Chief Samsell joined the Morgantown department in 1935, was promoted to captain in 1942 and named chief on July 16, 1956. He resigned his position last November, but remained as chief for an additional year at the request of the city. He has been active in fire training and has served as a state instructor. He is a member of the West Virginia Fire Chief's Association and the International Association of Fire Chiefs.

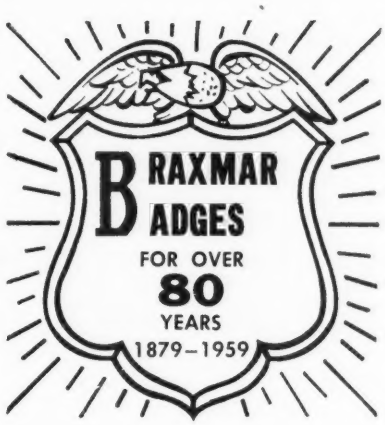
Benton Chief At Lincoln

Roscoe Benton, a 19-year veteran of the Lincoln, Neb., Fire Department was named fire chief on October 5th. He joined the department in 1940, was later promoted to both junior and senior captains and was named battalion chief-drillmaster in 1956. Recently he has been serving as fire inspector.

Leslie E. Downs Retires

Leslie E. Downs, an engineer specializing in research on paints and fire-retardant treatments for wood since he joined the staff of the U. S. Forest Products Laboratory, Madison, Wis., nearly 31 years ago, retired September 30.

Downs' work at the federal laboratory included research in cooperation with the Armed Forces Special Weapons Project



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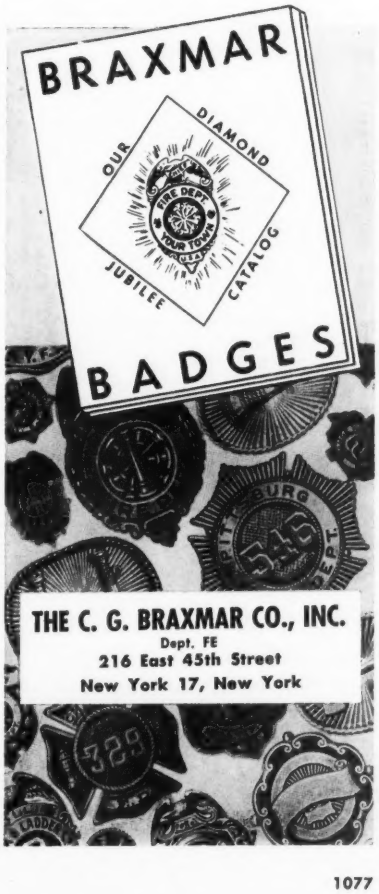

SPONCO AERIAL LADDER

If you missed the announcement of the all new SPONCO AERIAL LADDER in the October issue of this magazine, here is another opportunity to take a look at the newest thing on the market in the way of aerial fire fighting apparatus. (The 70 foot unit is shown in the photo, but 55 foot units are also available.)

The SPONCO is an all-steel unit with all operations powered—raise and lower, fly extension and retraction, and turntable rotation. The mechanical refinements engineered into the SPONCO add greatly to the speed, smoothness and operational efficiency of the unit.

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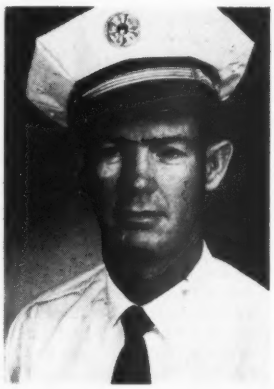
to determine how readily materials like paper, cloth, electrical insulation and wood ignite in the vicinity of a nuclear explosion.

Graham Named Chief Of McClellan AFB

Ralph B. Graham, for the past eight years chief of the Long Beach, Calif., Air Force Base Fire Department, was named chief of the McClellan AFB Fire Department on September 25. He is a veteran of 19 years as a Federal fire fighter.



He replaces Chief Harvey Hansen who has retired on disability after 20 years of service. Chief Hansen headed the McClellan Fire Department for 17 years.

Fire Chief's Son Wins National Scholarship

Robert G. Konecny, son of Linden, N. J., Fire Chief and Mrs. William J. Konecny, is the recipient of a 1959 National Merit Scholarship Award. He'll

major in metallurgy at Cornell University, with the intention of following a career in metallurgical engineering upon graduation. He is shown with his parents and Kempton Dunn (right), president of the American Brake Shoe Company, the organization that is sponsoring his scholarship. □□

Fatal Anesthetic Blast

A young woman died on the operating table at Bradford, Pa., Hospital on September 24 after absorbing most of the force of an anesthetic explosion within her mouth. Hospital reports stated that cyclopropane was being administered and it is theorized that a spark from one of the motors in the room may have ignited the volatile vapors.

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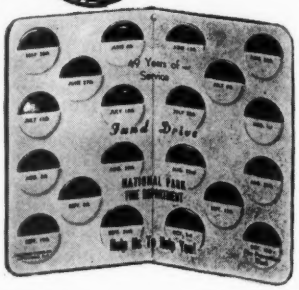

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Questions and Answers

Quick Pressure Calculations

To the Editor:

There is a good explanation of "Quick Pressure Calculations" on page 149 of "Fire Service Hydraulics." Can you supply the factors for three 2½-inch lines into a deluge set using 1¼-inch, 1½-inch, 1¾-inch and 2-inch tips? R. B.

Answer: The factors would be respectively: 1¼-inch tip—1/12 nozzle pressure; 1½-inch tip—⅛ nozzle pressure; 1¾-inch tip—⅕ nozzle pressure; 2-inch tip—⅓ nozzle pressure.

The above should give approximate friction loss value with deluge sets operating at 80 psi, and reasonable values at any pressure between 60 and 100 psi.

Vertical Lift

To the Editor:

What is the actual height a pumper lifts water? Is it to the center of the pump, the center of the intake or is it to the center of the gauge?

B. R.

Answer: The vertical lift of a pump is actually the distance from the surface of the water to the center line of the impeller eye. This is difficult to measure under normal conditions and other distances are usually taken for practical purposes. The new Sixth Edition, "Fire Department Pumper Tests and Fire Stream Tables," published July 1959, by the National Board of Fire Underwriters, states on page 14 that the vertical lift is taken as "the vertical distance from the surface of the water to the center of the pump suction inlet." As you will note, this provides a standard point of reference for easy measurement.

Fire Deaths

To the Editor:

At what fire in the United States have the greatest number of lives been lost? M. M.

Answer: The Peshtigo, Wis., catastrophe on October 8, 1871, caused the death of more than 1,100 people. Incidentally, this fire occurred on the same day as the beginning of the great Chicago Fire.

Due to lack of good communications at the time, it probably never received the prominence it deserved and was overshadowed by the great destruction of the Chicago Fire. □□

Nozzle Test Correction

The Elkhart Brass Manufacturing Co., Elkhart, Ind., participated in the high-volume fog nozzle tests recently conducted in Rochester, N. Y., as reported in the October issue of FIRE ENGINEERING, Page 933. The name of the company was inadvertently omitted from the list of cooperating manufacturers.

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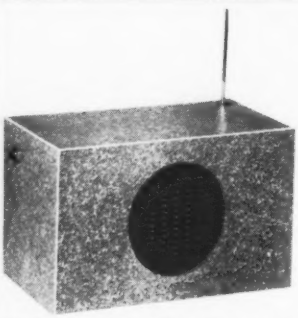

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ROSEBURG FINDINGS

Continued from page 1049

location, permitted to dry out, and then burned, a small number at a time.

6. That further detailed information regarding the packaging, handling, transportation, storage and use can be secured from Manufacturing Chemists Association, Inc., 1825 Connecticut Avenue, N. W., Washington 9, D. C., in their Manual Sheet A-10, titled "Fertilizer-Grade Ammonium Nitrate."

7. That State Fire Chief's (State Fire Marshal) experience in this disastrous fire and explosion definitely points out the need for a revision of the State Conflagration Act to make the Act more practical, realistic and workable, and to accomplish the purpose for which it is intended, namely, the prompt and efficient dispatching of relief to a community unable to cope with a fire problem.

It is strongly recommended that serious consideration be given to the proper legislative action to delete the words "after the Governor has declared martial law as provided in ORS 397.040," from Section ORS 476.530.

Obituaries

Chief Lloyd B. Canfield

Lloyd B. Canfield, 62, Beverly Hills, Calif., first fire chief, died after suffering a heart attack at his home in that city on October 1. Chief Canfield, who retired recently after several attacks, had served as chief for 34 years. A member of the International Association of Fire Chiefs, he was past president of the Pacific Coast Inter-Mountain Fire Chiefs Association and a former member of the Governor's Fire Advisory Board. *Cliff Dektar*

George L. McKenna

George L. McKenna, 77, retired assistant chief and deputy fire commissioner of the New York Fire Department, died September 30. The son of a fireman, he joined the department in 1905 and became a captain in 1910. He was promoted to assistant chief in 1934 and retired in 1941. Several months later he was appointed a deputy fire commissioner by the late Mayor LaGuardia and served in that capacity until 1944. During his career he was awarded two medals of valor for rescuing victims from blazing tenements.

One of his surviving sons, George McKenna, is a retired New York battalion chief.

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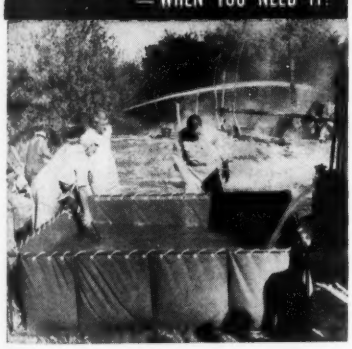

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This action photo from the Lake Geneva Regional News, Wisconsin, shows the Fol-Da-Tank at work. Water from the tanker is being dumped into the Fol-Da-Tank so that it can return to the nearest water supply for another load thereby assuring a constant supply of water from which to work.

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ALUMINIZED CLOTHING

Continued from page 1053

tion, a 1½-inch hand line can be more effective than a cumbersome 2½-inch line. In larger fires, the most advantageous positions can be held even though men dressed in conventional clothing would have to retreat because of radiant heat. This ability to move in close is particularly important with water fog where range is limited. Type 82 will not burn if exposed to back flash for a few seconds, but is is not designed for proximity work.

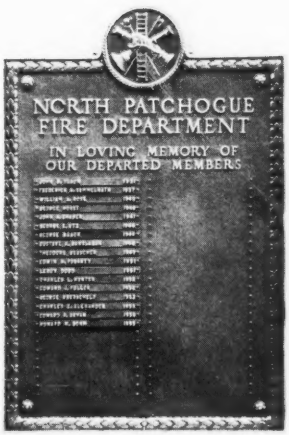
For proximity jobs, the Air Force has adopted a suit made of aluminized fabric and inorganic fibers which prevent burnthrough during prolonged unavoidable exposure to flames or back flash. This Type 73 material weighs 10 ounces per square yard and was selected to give their crash crews maximum mobility because it is so light in weight. It combines 53 per cent asbestos, 31 per cent glass cloth and 16 per cent cotton backing.

Type 75, a new development which has greater resistance to wear than other types, is backed with Underwriters' grade asbestos weighing 1.2 pounds per square yard. Its tight-knit aluminized surface and resistance to abrasion qualify it as good material for proximity work and for fire-entry work.

Several types of aluminized glass cloth are currently available. They have the advantage of weighing less than one-half as much per square yard. This saves as much as 6 to 8 pounds in a complete suit. They are particularly designed for suits that are used only occasionally for emergency purposes.

Fire-entry necessitates maximum insulation from the heat, for it is in this phase of fire fighting that men come into prolonged contact with flames. The outer shells of proximity suits are essentially the same as those of all other aluminized fabric clothing; the principal difference lies in added insulation between the suit and its wearer. If it is necessary to go into flames for more than a few moments to accomplish an important objective, it should be expected the suit may be damaged. In addition, the intense, oxygen-consuming heat may make it necessary for the individual to wear an auxiliary breathing apparatus. Suits made for fire-entry must provide true head-to-toe protection with no gaps in the "armor."

Maintenance for all of these types consist principally of keeping the heat-protective clothing clean—clean of soot (which nullifies heat reflectivity) and clean of corrosive chemicals



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which may damage the micro-thin coating of pure aluminum. If a protective suit is scorched by inadvertent overexposure to flames or is torn, the effective repair is a patch of aluminized fabric over the affected area. If a worn area is merely sprayed with an aluminum paint, that area will reflect 50 per cent of radiant heat at most, absorbing the remaining half. This is only one-fifth as effective as the original aluminized fabric, which absorbs at most 10 per cent of the radiant heat.

The singular value of aluminized fabric is its ability to reflect more than 90 per cent of radiant heat, even though it is up to 50 per cent lighter in weight than ordinary heat-protective clothing. This high reflectivity exists only when the aluminized surface is kept clean and in good condition. Used with intelligence, heat-protective clothing made of this material enables men to move in close and fight fire when such action takes more than courage. □□

CHRISTMAS HAZARDS

Continued from page 1048

tions, but we can reduce their potentially high fire hazard in a number of commonsense ways." Mr. Scott points out that it takes only 18 seconds for an evergreen tree to burn furiously to charred wood. While there is no such thing as a fireproof Christmas tree, there are treatments of trees brought into the home for Christmas decoration that very greatly reduce the fire hazard. These precautions are spelled out in detail in the literature distributed annually by the National Board of Fire Underwriters.

Beautiful but dangerous

The potential hazard of some of the beautiful Christmas traditions is shown by a fire which, fortunately, was discovered and extinguished promptly. Approximately 600 persons were attending Mass in St. Paul's Roman Catholic Church, Wilmington, Del., when fire broke out in a Christmas creche in the church basement last Christmas morning. A seminarian in the boys' sacristy in the basement smelled smoke. He grabbed a hand extinguisher and ran to the creche. Simultaneously, a priest who had seen the smoke arrived, and together they practically extinguished the fire before firemen arrived. Three evergreen trees flanking the creche were not touched. Arson investigators surmised that the blaze may have been started by a spark from a short circuit in an amber light in the inside foreground of the creche.

To eliminate the post-Christmas hazards of Christmas trees, Omaha, Neb., has held a community Christmas tree burning for the past five years. Through the cooperation of the park and fire departments, a burning site was made available in a city park. Since 1957, two sites have been used, one in the north section of the city, the other in the south.

The Junior Chamber of Commerce fire prevention committee, of which Assistant Chief Inspector Harry J. Hunter is a member, handles the publicity. Local newspapers, radio and TV publicize "Operation Sky Blaze," and urge the citizens to bring their Christmas trees to the burning sites on the Saturday and Sunday following New Year's Day. Thus, the trees are discarded before they become dangerously dry. The hazard to children, who would be tempted to burn—and customarily do — trees haphazardly discarded, is eliminated or greatly re-

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF FIRE ENGINEERING, published monthly at Lancaster, Pa., for Oct. 1, 1959.

1. The names and addresses of the publisher, vice president, executive manager, general manager, and editor are: Publisher: The Reuben H. Donnelley Corporation, 305 East 45th St., New York 17, N. Y.; Vice President, Edward A. O'Rorke, 205 East 42nd St., New York 17, N. Y.; Executive Manager, Edward B. Wintersteen, 305 East 45th St., New York 17, N. Y.; General Manager, I. H. Case, 305 East 45th St., New York 17, N. Y.; Editor, Don O'Brien, 305 East 45th Street, New York 17, N. Y.

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4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers, during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly and triweekly newspapers only.)

E. B. WINTERSTEEN,
Executive Manager

Sworn to and subscribed before me this 24th day of September, 1959.

WALTER H. FREDRICKS,
Notary Public, State of N. Y. No. 41—6391975
[SEAL]
(My commission expires March 30, 1960.)

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Book Department

FIRE ENGINEERING

305 East 45th Street

New York 17, N. Y.

duced. In addition to the thousands of citizens who bring their own trees to the blaze sites, boy scouts assist in gathering trees throughout the city and bring them to loading points. Trucks furnished by merchants and business establishments pick up these trees and deliver them to the blaze sites.

While "Operation Sky Blaze" is a Kiwanis project, it is under the direct supervision of the Omaha Fire Department, and an engine company and a rescue unit stand by at the burning. An officer is temporarily detached each Christmas from his other duties in the bureau of fire prevention to supervise the project.

The Union Pacific Railroad's 75-foot tree, the large tree used by the Salvation Army in its "Tree of Lights" charity campaign, and a display of fireworks enhance the "show."

The Ak-Sar-Ben Amateur Radio Club provides mobile radio coverage at the loading points and at a land station where telephone contact is available. In 1956, a pile of trees at the burning site was mischievously set afire the night before the scheduled burning. Since then, watchmen have been hired to prevent a recurrence. Fire Chief E. W. Fields of Omaha has reported to FIRE ENGINEERING that the project "has worked out very satisfactorily in eliminating the hazards of discarded Christmas trees."

Paterson, N. J., has found discarded Christmas trees a greater nuisance and hazard than trees in buildings. In the past four years, the Paterson Fire Department has responded to only one serious tree fire in a building. Units are called out frequently, however, in the post-Christmas season because of trees burning in streets and lots. This is attributed to the fact that refuse collection is not a municipal service in Paterson, but is handled by private contractors, whose trucks are not equipped to pick up the trees.

Crash inspection program

However, the Paterson Fire Department concentrates on what is an even greater seasonal hazard to the city—the accumulation of cardboard, paper or other combustible material in stores in the city's compact shopping center.

Starting in November and continuing into February, the department conducts a crash inspection program in which every fire company participates and which covers every mercantile building in the city. At the beginning of the shopping season, firemen inspect every store and deliver a letter which enlists the merchant's cooperation. If this original inspection reveals conditions needing

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• From 300 to 10,000 GPM • Locks in Position •

Fig. 3

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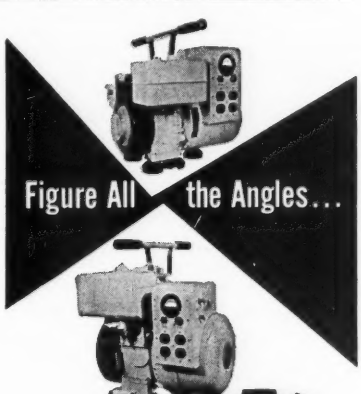

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1949 International KB5 with K7 52 Motor, 5000 mi. Inclosed comp.—front mounted Champion direct-drive pump. 750 GPM—800 gal. new tank. 2 siren lights, booster brakes, larger platform front and rear.
Sealed bids with right to reject any and all bids. Photos on request. Write:

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BRISTOL, ILL.
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Have purchased entire over-run of Gov't contract for Navy Fireman's boots; latest U. S. Spec. (April 1958), with flexible steel plate through sole and steel safety cap toe, sizes 7-12.

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For Christmas

SPARKY FIRE DOG DOLL

$5.95 plus 60¢ shipping

Other Fire Safety Gifts Too

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1936 Hale Triple Combination Pumper
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Hercules 6 cylinder motor.

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Box 1425 Providence, R. I.

correction, a re-inspection is made a week later. Usually, when the re-inspection is made the conditions have been corrected.

During the pre-Christmas season, the inspectors pinpoint the hazards known to cause 90 percent of mercantile fires. Unless a condition requires immediate attention, the firemen do not harrass the businessmen at this busy period. After the holidays, the inspectors concentrate on the removal of accumulations of cardboard, paper or other combustible material.

Deputy Chief Joseph Dayspring, supervisor of the bureau of combustibles, originated the program in 1957; today it is being carried on by his successor, Deputy Chief Solomon Reines. As a result of the program, the entire business section of the city was visited by fire department members within a short time. Not only were fire prevention and fire protection improved, but many members of the department became familiar with occupancies in the shopping district. The program had its public relations value for the department also. Commenting on it, the *Paterson Evening News* described it as a model performance.

Hazards due to weather

In addition to those hazards directly tied in with the holiday observance, normal weather conditions for the season increase the danger from fire.

BADGES
of authority

DESIGNED WITH DISTINCTION
EXECUTED IN METALS OF
TIMELESS BEAUTY... WORN
WITH HONOR AND RESPECT
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When a general alarm fire swept a six-apartment duplex building in Lowell, Mass., last Christmas Eve while the mercury registered 3° above zero, the first engine companies on the scene found the three hydrants nearest the blazing building frozen. The firemen had to lay a line from some distance before they could get a stream on the fire. Although no lives were lost, 15 persons including nine children were driven into the near-zero weather, some still clad in night clothing. Most of the fire victims lost all their personal belongings including Christmas gifts.

What can be done?

The first thing that must be done if Christmas hazards are to be mitigated or eliminated and loss of life and property cut, is to pierce the lethargy of the public. Our citizens must be brought to realize that, whether many lives are lost at one time in one place or nationwide over several days, the victims are just as dead and the families just as bereaved. And there is always the possibility that a listener may become one of the fatal statistics of the coming holiday season. Does this sound brutal and gruesome? It's a lot less brutal and gruesome than an actual fire.

The information disseminated by the National Board of Fire Underwriters provides ample ammunition for such a campaign. The lessons in the National Board's literature can be brought home by recounting some of last year's incidents.

It may be well to consider restricting smoking in department stores, and curbing the use of Christmas trees and flammable decorations in these stores and in other places of public assembly, or insisting on greater safeguards.

If discarded Christmas trees are a problem, the community-supervised burning of such trees, as practiced by Omaha, might be the solution.

If accumulations of rubbish in the shopping center are a seasonal hazard, Paterson's crash inspection program could be the answer.

Finally, the community should be warned about the danger of portable space heaters and the hazard of "pushing" a heating system. The citizens should be reminded that snow and ice on the roads may delay response of apparatus; frozen hydrants may hamper fire fighting, and high winds may rapidly spread a fire.

The ghastly toll of Christmas fire deaths can be cut. It is a goal worth striving for; the stakes are high. Success in such a campaign will mean that a community will enjoy unmarred the peace and happiness which belong to this holy season. □□

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ON THE VERSATILE

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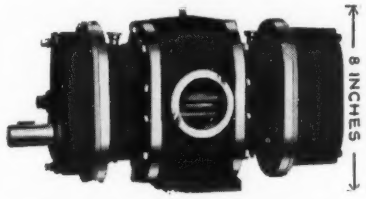

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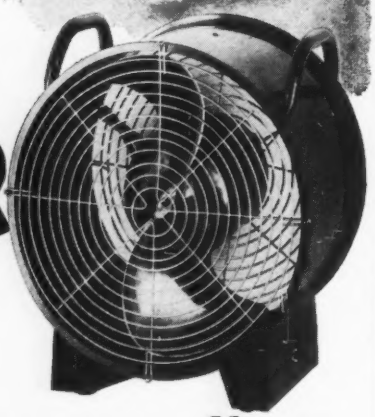

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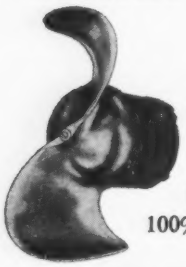

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- ★ **Design permits vertical stacking**
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NOVEMBER, 1959

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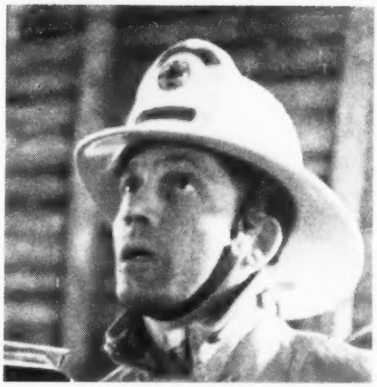

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